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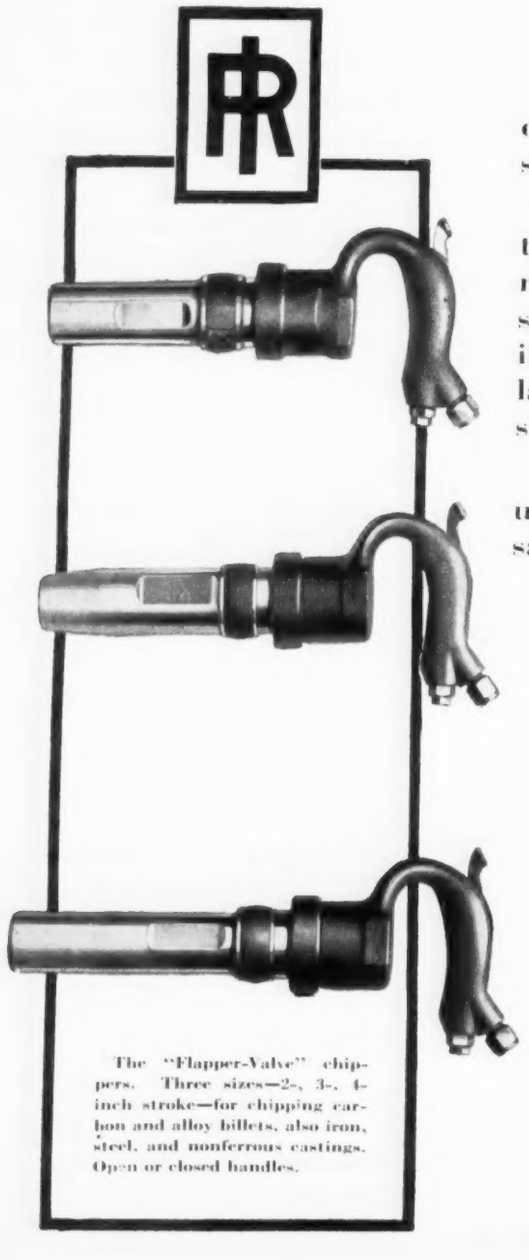

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As the Editor Views the News

PRESIDENT Roosevelt's Green Bay address was a disappointing, if not disgusting, recital of misleading generalities. He declared that persons who have hoped or asked that the President would act to restore confidence are guilty of delaying the action of recovery. Not satisfied with this specific charge, he ridiculed two unnamed, "important" men who wrote to him "pleading that I say something to restore confidence." In thus poohpoohing those who see a way of relieving the present uncertainty, the President insults the intelligence of nine out of every ten responsible business executives in the country. A few days at his desk in Washington may show him his error.

• • •

After saying, in effect, that confidence is not worth bothering about, the President went to some pains to prove that confidence is returning. "It is returning to manufacturers," he said, "who, in overwhelming numbers are comparing the black ink of today with the red ink of many years gone by." May we add, parenthetically, that the confidence would be more substantial if the President would promise stability in national policy. Manufacturers desire only reasonable assurance that the cards in the deck of the new deal will remain unchanged—at least for the duration of one game.

Don't Change Cards So Often

• • •

The President said that confidence is returning to the workers "who have achieved under NRA rights for which they fought unsuccessfully for a generation." We doubt very much whether the 93 or 94 per cent of employes in industry who are not identified with national labor unions will subscribe to that statement. Judging from recent statements by the leaders of national labor unions, they are far from satisfied with the new deal's deal to the union labor movement. As a matter of fact, there is much evidence, even in the conservative ranks of union labor, of a feeling that the union labor movement has been double-crossed by the new deal. On the other hand, it is quite probable that the communist-agitator fringe of organized labor will endorse the President's statement; its members have profited by the new deal.

What Have Workers Won?

• • •

Much of the uncertainty in business today arises from the lack of policy in NRA. Its handling of wage minimums in codes (p. 20) is contrary to the new deal philosophy in regard to decentralizing industry. There is also something for business to worry about in the demand of the labor advisory board of NRA that Division Administrator Glancy be rebuked for settling the Harriman mills case (p. 15). In other words, if organized labor cannot get the decision it tries to get the man! Then there is that matter of a permissible 15 per cent reduction in quoting to the government, on which a test case arises next Wednesday when bids for naval vessels are opened. Big consumers of steel are anxious to see if prices are chiseled, and if they can get the same.

NRA Still Weakens Codes

• • •

Announcement of a new pipe line on the Pacific coast (p. 51), decision of an automobile company to build a new assembly plant on the Atlantic seaboard (p. 72), recent repeat orders for light weight trains, an encouraging volume of under-cover rehabilitation work, and other indications suggest that the restrictions on the investment of private capital are being lifted tentatively. . . . A new development in illumination—the science of seeing—is in the process of improving lighting for industrial operations. STEEL's series of three articles (p. 23) will help manufacturers who have special problems in lighting for production, inspection, assembly, etc. . . . Metals (p. 28) play an important role in the regulation and control of traffic in American cities.

Is Money Less Timid?

E. L. Shaner

Code Matters Loom Large; Again Discuss Shape Pact

NRA code matters engaged the attention of the iron and steel industry last week, both on account of developments on existing codes and speculation concerning the future of the entire NRA idea, hints from Washington indicating impending changes of great moment.

Returning from his western swing, NRA Administrator Johnson decreed Aug. 10—last Friday—as the deadline for approving codes. On that day 97 proposed agreements were undecided, including those for such major industries as structural steel fabricating, shipping, utilities, and communications.

Speculation at Washington hinges on the future of pricing provisions of codes and also whether NRA may be largely demobilized, now that it has passed the peak of codification, and enforcement of existing codes transferred to the federal trade commission.

Resume Structural Conference

Conferences were resumed Thursday by Deputy Administrator Walter G. Hooke and officials of the American Institute of Steel Construction Inc., although the latter were adamant that they would not accept any code that failed to include control of the erection of the steel which they fabricate.

On Monday night a 10-day stay of the effective date of the proposed code was promulgated making it now effective Aug. 16—contingent upon acceptance by the industry.

Late last week the steel code authority—the American Iron and Steel institute—met with government representatives on the authority to consider a final decision in the matter of water rates. Interests in the Middle West, especially those reached by Mississippi barge lines, have agitated recognition of water tariffs in arriving at delivered prices.

Incidentally, Walter S. Tower, executive secretary of the institute, is returning from Europe this week following a brief vacation.

Charged with drawing a code embracing all of the mining districts of the country, Lake Superior iron ore interests, headed by R. C. Allen, of Cleveland, last Monday formally presented a code for the iron ore mining industry.

As usual, objections were registered by the American Federation of Labor against labor provisions, a maximum 30-hour week being urged, and objection being advanced to the minimum wage of 27 cents for the South.

Labor representatives also advocated an embargo on the importation of iron ore, maintaining that about 10 per cent of domestic consumption is brought in from abroad. This was a shaft at eastern producers of iron and steel. According to Deputy Administrator Janssen, the authority to prohibit importations is in the law itself and not a matter for codes.

A further proposal by labor was that for a time a prohibition be placed upon the use of ore now in stock, restricting current consumption to current production.

The gray iron industry won a signal victory last week when it obtained an exemption from administrative order X-36, the effect of the decision being to require many plants which operate a foundry as a department of their business and doing some jobbing work for outside customers to contribute to the expenses of the gray iron industry code authority.

The gray iron code authority maintained successfully its contention that a large proportion of the total tonnage of gray iron castings is produced in plants where the major line of activity is something other than the production of gray iron castings. Every foundry doing some jobbing work therefore is required to report to the code authority and to bear its proportionate share of the cost of administration.

The exemption from the same order, granted to the nonferrous foundry industry, has been terminated with the exception that this termination is limited to members of the industry whose foundries produce nonferrous castings for sale as castings.

Seek Foundry Code Exemptions

Public hearing on applications for exemption from the gray iron foundry code, including that of the Holmes Foundry Co., Port Huron, Mich., on the ground it is conducting only an intrastate business will be held Aug. 15, having been postponed from Aug. 7. On the same day a hearing will be held on modification of the steel casting code.

A conference between the iron and steel code authority (the American Iron and Steel institute) and the scrap iron code authority will be sought by the latter in an effort to improve relations of the two industries. This action follows the recent conference of the scrap iron code authority at Pittsburgh. Alleged unfair competitive practices by steel mills in the purchase of steel scrap, and other market conditions, will be discussed.

THIS SHOWER WOULD HAVE SUITED GULLIVER: Crane Co., Chicago, calls attention to its exhibit at A Century of Progress at Chicago by this Brobdingnagian shower, 30 feet high, with a head 15 inches in diameter. The building houses an exhibit of the company's industrial products, valves, fittings, steam specialties, metals and alloys, as well as plumbing, heating and air-conditioning equipment

Labor

NATIONAL steel labor relations board announced Friday afternoon it will hold hearings in Pittsburgh this week as follows: On Tuesday for the Apollo Steel Co., Apollo, Pa.; on Wednesday for the Standard Tin Plate Co., Canonsburg, Pa.; on Thursday for the West Virginia Rail Co., Huntington, W. Va.; on Aug. 20 at Portsmouth, O., in connection with the Wheeling Steel Corp. All of these cases deal with election of employe representatives and collective bargaining.

National Tube Co. has closed this week and next its plants at Lorain, O., and McKeesport and Ellwood City

Pa. Newspaper reports that 20,000 men are affected are an exaggeration. Schedules at these plants have been short, and the accumulation of orders is expected to provide employes substantially as many work hours when the plants resume as if they had operated.

REDS GROWL COMPLAINTS

A motley 200 delegates to the openly-avowed communist steel union, known as the Steel and Metal Workers Industrial union, ended a three-day biennial convention at Pittsburgh last week.

Other than an immediate increase of 35 per cent in wages, the 6-hour day and abolition of North-South wage differentials, this union decided it wants 2 per cent of payrolls totals to be paid by employers into an unemployment fund to be administered by the union.

After declaring that "a mass strike of all steel workers in the near future" is part of their program, this left-wing group took time enough to play up a side issue. The new deal was attacked as "giving two and a half billion for more cruisers and other deadly weapons so that American capitalists can prepare for another bloody war."

¶Required to answer interrogatories of the federal government in connection with the suit growing out of the Dec. 15 employe representative election, the Weirton Steel Co. on Aug. 3 filed data with the federal court at Wilmington, Del., stating that total production of all products at Weirton plants in 1933 was 577,976 tons and in the first quarter of this year 179,730 tons. Operations of Weirton reached a high of 90.42 per cent in March. A hearing will be held Sept. 5 on the case.

Financial

ARTHUR ROEDER, formerly president of the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., and since Aug. 1, 1933, receiver, has been appointed temporary trustee for the company under the new federal bankruptcy law, by the United States district court in Denver.

This action transfers the company from the receivership to the bankruptcy court and involves no change in operation or management.

The Colorado company last week reported a profit of $642,460, after charges, for the first half year, compared with a loss of $1,554,460 in the first half of 1933. Said Mr. Roeder last week:

"A plan for reorganization must be satisfactory to two-thirds of the creditors, the company must improve its cash position so there will be some financial security for it, and there must be good prospects for a fairly substantial and continuing steel operation for the company.

"The outlook at the moment is obscure because of political conditions, slow business and the drought. Constant new burdens are being placed on the steel industry, already weak. Obscure is the way I would describe the outlook for successful reorganization. If business improves we have a much better chance, of course."

¶Ludlum Steel Co., Watervliet, N. Y., reports second quarter net profit, after charges, of $228,774, compared with net of $146,867 in the first quarter. This was before deduction of the preferred dividend. Ludlum's net in the first half, after taxes and depreciation was $375,641, equal to $1.14 a common share after payment of the preferred dividend. In the first half of 1933 the net loss was $87,476.

TOOL BUILDER OPTIMISTIC

Reporting an increase of 110 per cent in total business over the first half of 1933, the Warner & Swasey Co., Cleveland, machine tool and precision instrument manufacturer, deduces that heavy industry is again buying machine tools and is investing in equipment to replace obsolete machinery. Turret lathes, classed as durable goods, were in heavier demand from manufacturers of durable goods than manufacturers of consumer merchandise, according to C. S. Stilwell, sales manager. Substantial orders also were booked from makers of canning machinery, electrical equipment, pumps and engines, bushings and castings and automobile and parts manufacturers.

¶Follansbee Bros. Co., Pittsburgh, reports net loss of $283,428 for the six months ended June 30, after depreciation, interest, etc., compared with loss of $346,642 in first half of 1933. For the second quarter the loss was $81,722, against loss of $201,706 in the preceding quarter, and loss of $140,958 in the June quarter of 1933.

SALES AND PROFITS UP

Link-Belt Co., Chicago, reports sales of $4,916,830 for the first six months, compared with $3,154,459 a year ago.

¶Chicago Pneumatic Tool Co. Chicago, shows net profit of $165,039, after federal taxes, depreciation, etc., in the second quarter of 1934, compared with profit of $24,761 in the preceding quarter and net loss of $87,627 in the June quarter of 1933. For the six months ended June 30 the profit was $189,800, against loss of $275,166 in the first half of 1933.

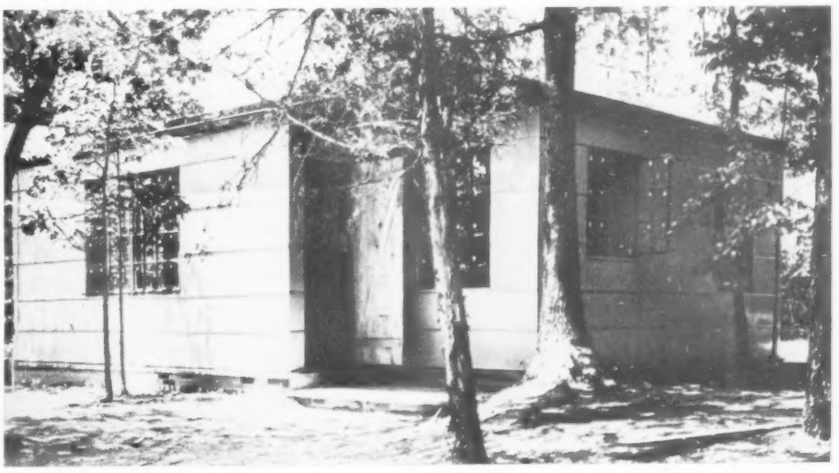
¶Electric Controller & Mfg. Co., Cleveland, reports profit of $53,570 for the first half of 1934, against loss of $109,628 in the first half of 1933.

¶American Steel Foundries, Chicago, reports net income of $452,845 in the second quarter, equal to 36 cents a common share, compared with $411,540 loss in the June quarter of 1933.

¶Midland Steel Products Co., Cleveland, reports net of $222,794 for the second quarter, compared with a profit of $70,857 in the first quarter.

TRUCK SALES IMPROVED

Yale & Towne Mfg. Co., New York, reported net profit of $62,265 for the six months ended June 30, compared with net loss of $189,417 in the first half of last year. For second quarter it showed net profit of $41,011, against profit of $21,254 in the preceding quarter and net loss of $82,324 in the second quarter of 1933.



FIRST ALL-STEEL HOME FOR GOVERNMENT: Nestling in the trees of the Tennessee valley, this four-room home was built for the Tennessee Valley Authority near Norris, Tenn., by the Insulated Steel Construction Co., Middletown, O., using its patented frameless steel construction. This company erected the metal chassis, while local contractors supplied the finishing touches. The house, costing $2100, contains living room, alcove, bedroom, bath and kitchen. It is heavily insulated, heated by unit electric heaters. Porcelain enamel siding is practically maintenance-free, being cleaned easily with a damp cloth. Stainless steel clip-strips hold the siding panels in place

Transportation

RAILROAD traffic officers continued working at Chicago last week on plans for proposed freight rate increases. Major differences between individual roads have been ironed out, but the report of the findings or recommendations of the special committee of the American Railway association with reference to this subject is not expected before another week or two. Rate increases will add about $160,000,000 to their revenue, railroads hope.

¶Railroad purchases in May, exclusive of new equipment, total $56,300,000 or 78.8 per cent greater than in May, 1933, according to *Railway Purchases and Stores*. In five months of 1934 railroad purchases totaled $261,500,000, compared with $162,400,000 in the comparable period of 1933.

Meetings

NONFERROUS Foundry Association for Industrial Recovery will hold its annual meeting at the Hotel Bismark, Chicago, September 19-20. Special sessions will be devoted to such subjects as standard classification of castings as to intricacy and weight, standard terms of payment, standard cost accounting and trade customs. Several hundred are expected to attend. Sam Tour, 47 Fulton street, New York, is executive secretary of the association.

¶American Engineering council, 744 Jackson place, Washington, has scheduled its next annual meeting in Washington, Jan. 10-12. The first day will be set aside for meetings of committees; the last two for sessions of the assembly.

PWA

SUMMARIZING PWA activities from the inauguration of the public works program June 16, 1933, to Aug. 1, when the total of $3,700,000,000 appropriated was allotted, Secretary of the Interior H. L. Ickes, who is also PWA director, reports the following distribution:

Street and highway projects, $539,722,154; utilities, including sewer and water system projects, $301,624,570; buildings of all character, $362,208,108; reclamation and flood control, $254,454,819; construction of vessels, $261,924,467, including $238,000,000 for the navy; bridges, viaducts, drydocks, wharves, piers, docks, tunnels and subways, $172,562,962; railroads, $199,607,800; aircraft, physical improvements to landing fields and other air navigation aids, $27,963,698; recreational facilities, $3,579,053; pest and disease control, surveying, mapping, ordnance, machine tools for navy yards and game and fish protection, $104,091,216.

By Aug. 1, it is estimated, "key" employment reached 675,000 directly, with some thousands also engaged in manufacturing, processing and transporting material.

NRA

CODES approved in the past week include the following:

For steel joist industry. Minimum rates of 34 cents an hour in the South and 40 cents elsewhere for labor have been established. Provision whereby the code could have been terminated by 90 per cent of the industry has been eliminated.

For diesel engine manufacturing, jack manufacturing, concrete mixer, and railway appliance manufacturing, all supplemental to the MAPI code, effective Aug. 12. Maximum hours and minimum wage clauses of the basic code are carried over entirely into the supplements. Approval of the four codes is subject to a stay of the clause providing for a waiting period between the date of filing and the effective date of price lists.

Amendment to the cast iron soil pipe code providing for the addition of certain standard provisions in order that the code may conform to the present policy of NRA. The amended code no longer contains provisions which might be construed to mean the mandatory use of the Birmingham point.

Amendments to the metal tank code revising certain trade practice provisions.

CODE AUTHORITIES APPROVED

Screw cap manufacturing industry: R. M. Heames, Allied Products Corp., 4646 Lawton avenue, Detroit; W. H. Hill, Scovill Mfg. Co., Waterbury, Conn., A. M. Jones, Buffalo Bolt Co., North Tonowanda, N. Y.; H. D. North, Ferry Cap & Set Screw Co., 2151 Scranton road, Cleveland; and H. E. Penfield, Chicago Screw Co., 1026 South Homan avenue, Chicago.

Machine screw manufacturing industry: R. A. Gunn, Federal Screw Works, 3401 Martin avenue, Detroit; W. H. Hill, Scovill Mfg. Co., Waterbury, Conn.; A. B. Peck, American Screw Co., Providence, R. I.; E. A. Thatcher, United Screw & Bolt Corp., 2513 West Cullerton street, Chicago; and E. M. Whiting, Pheall Mfg. Co., 5708 Roosevelt road, Chicago.

Wrench manufacturing industry: William P. Jeffrey, 1 Wall street, New York; Alfred J. Eichler, Walworth Co., 60 East Forty-second street, New York; and Horace Armstrong, Armstrong Bros. Tool Co., Chicago.

Refrigerating machinery industry: A. H. Baer, executive vice president, Carbondale Machine Co., Carbondale, Pa.; D. Norris Benedict, vice president and general manager, Frick Co., Inc., Waynesboro, Pa.; J. M. Fernald, general manager, Baker Ice Machine Co. Inc., Omaha, Nebr.; G. A. Heuser, secretary and treasurer, Henry Vogt Machine Co., Louisville, Ky.; J. I. Lyle, president, Carrier Corp., Newark, N. J.; F. M. Roessing, Roessing Mfg. Co., Pittsburgh; W. S. Shipley, president, York Ice Machinery Corp., York, Pa., and Emil Vilter, president, Vilter Mfg. Co., Milwaukee. William B. Henderson is to be secretary-treasurer of the code authority, with offices in the Southern building, Washington.

Production

STEEL production raised a point last week to 27½ per cent, owing to gains in the Youngstown, Wheeling, Detroit, Buffalo and Birmingham districts. This gain will be lost this week if schedules at Youngstown and Buffalo are carried out. Other districts remained unchanged last week. Details for districts follow:

Cleveland-Lorain—Unchanged last week at 32 per cent, but scheduled to recede sharply this week as the National Tube Co. closes its works at Lorain as well as at McKeesport and Ellwood City, Pa., for the two weeks ended Aug. 25. This will reduce the Cleveland rate to about 15 per cent provided other makers do not change.

Youngstown—Advanced 3 points to 38 per cent last week, but valley mills are expected to open this week at 32 per cent, off 6 points, due to suspension of Carnegie Steel Co.'s Ohio works. Republic Steel Corp. has started up eight sheet mill units at its Deforest works at Niles, O., for the first time since the last week of June. Newton Steel Co., Newton Falls, O., has been closed down indefinitely, throwing 700 men out of work, due

U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

	(Tons)		
1934	Shipments	Change	Per cent
Jan.	331,777	268,862—	44.76—
Feb.	385,500	53,723+	16.22+
Mar.	588,209	202,709+	52.58+
Apr.	643,009	54,800+	9.33+
May	745,063	102,054+	15.87+
June	985,337	240,274+	32.24+
July	369,938	615,399—	62.45—
7 mo.	4,048,833	.....	.....
1933			
Jan.	285,138	57,562+	25.29+
Feb.	275,929	9,209—	3.22—
Mar.	256,793	19,136—	6.93—
Apr.	335,321	78,529+	30.19+
May	455,302	119,981+	35.78+
June	603,937	148,635+	32.64+
July	701,322	97,385+	16.12+
7 mo.	2,913,742	.....	.....

to receipt of orders for sheets too wide to be rolled at Newton Falls mill and diverted to the Monroe, Mich., plant.

Greer Steel Co., Dover, O., resumed operations Aug. 8 after being idle since July 1. Full operation requiring 300 men is expected shortly.

Chicago—Unchanged last week at 32 per cent, following a slight drop the previous week. No major revisions in schedules are in early prospect, based on the rate of incoming business, with definite recovery expected to be postponed until September at least. Nine of the district's 36 steelworks blast furnaces are on.

American Sheet & Tin Plate Co. plant at Elwood, Ind., has increased its operations from 9 to 12 turns. Fourteen of the 20 mills have been operating on a schedule of 9 turns weekly during the past month.

Eastern central seaboard—Unchanged at 22 per cent, with little variation expected over the remainder of this month. Steelmaking operations at one eastern mill continue suspended for the third consecutive week. One open hearth may be put into operation this week.

Pittsburgh—Unchanged at 19 per cent last week. Expectations that the operating average would drop to 16 per cent last week failed to be confirmed, owing chiefly to a fair call for tin bars that appeared unexpectedly. A leading independent's open hearths remain closed, but those of two larger mills here are steady at around 20 per cent. Figured on a mathematical basis, the number of active open hearths here is actually higher than 19 per cent, but the flexibility of operations has been stretched to a minimum. Where open hearths were turning out two and three heats daily recently they are now averaging one to one and a half heats every 24 hours.

Blast furnace operations are at an approximate 25 per cent rate, with 16 out of 60 steelworks blast furnaces on schedule. The net loss of one stack from a week ago was caused by Pittsburgh Steel Co. banking its one Monessen, Pa., stack. Therefore, these 16 stacks include 8 of 32 for Carnegie Steel Co.; 3 of 11 for Jones & Laughlin Steel Corp.; 2 of 7 at Johnstown, Pa., for Bethlehem Steel Co.; 1 of 4 for National Tube Co. at McKeesport, Pa.; and 1 of 2 each for American Steel & Wire Co.'s Donora, Pa., works and Pittsburgh Crucible Steel at Midland.

Wheeling—Scheduling of 11 open-hearth furnaces out of the district's 39 represented an increase of two furnaces from a week ago and caused a 5-point increase to 30 per cent. Open-hearth departments of two district producers are closed.

Detroit—Thirteen out of 17 open-hearth furnaces made steel here last week, giving the Detroit district a rating of 77 per cent, an increase of 1 point. One local producer added an open-hearth furnace Aug. 6 and has all nine on; the other, four of eight.

Buffalo—Gained 2 points to 34 per cent last week, with 13 out of 38 open hearths active. This week district operations are due for an 8 point setback unless there is a last minute revision in schedules, which isn't likely. Three open hearths are scheduled to go down this week, making the rate 26 per cent.

Birmingham—Steel production was resumed at four of the larger open-hearth furnaces last week, making the rate 20 per cent, after being virtually suspended the week previous. A slight increase is expected this week.

¶Shipments of steel by the United States Steel Corp. in July were 369,938 tons, compared with 985,337 tons in June, a loss of 615,399 tons, or 62.45 per cent. Total shipments for seven months of 1934 were 4,048,833 tons, compared with 2,913,742 tons for the same period in 1933. The accompanying table affords comparison.

July Ingot Output Half That of June; Seven Months 46.5 Per Cent Over 1933

IN THE face of a decline of 49.2 per cent in July from June, 1934, production of steel ingots for seven months of 1934 was 46.5 per cent greater than for the corresponding period of 1933, according to the American Iron and Steel institute.

Total calculated production for July, 1934, was 1,472,584 gross tons, an average daily rate of 58,903 tons, compared with total production of 3,015,972 tons and an average daily rate of 115,999 tons in June, 1934. The total in July, 1933, was 3,168,354 tons, and the average daily rate was 126,734. In 1934 the high point was reached in May, with a decline the two succeeding months. In 1933 the upward swing continued through July and then declined to the beginning of 1934.

Total production for seven months of 1934 was 17,653,473 gross tons, an average daily rate of 97,533 tons, compared with a total of 12,042,742 tons and a daily rate of 66,904 tons for seven months of 1933. Per cent of operation varied in the same proportion as the tonnage figures.

The daily rate in July, this year, at 58,903 tons, was the smallest since November, 1933, when it was 58,507, the previous low being in April, 1933, at 53,817 tons.

Steel Ingot Production—1933-34

97.82 Per Cent of the Industry Reporting

Gross Tons

1933	Open-Hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approx. daily output all companies	Per cent operation
Jan.	885,663	109,000	994,663	1,016,870	26	39,110	17.99
Feb.	992,798	126,781	1,049,579	1,073,012	24	44,709	20.57
Mar.	784,111	94,509	878,620	898,236	27	33,268	15.30
Apr.	1,180,823	135,217	1,316,040	1,345,422	25	53,817	24.76
May	1,176,425	216,841	1,933,266	1,976,428	27	73,201	33.68
June	2,211,652	296,765	2,508,417	2,564,420	26	98,632	45.37
July	2,743,326	355,836	3,099,162	3,168,354	25	126,734	58.30
7 Mo.	10,444,798	1,334,949	11,779,747	12,042,742	180	66,904	30.78
Aug.	2,430,663	370,370	2,801,033	2,863,569	27	106,058	48.79
Sept.	1,991,204	242,014	2,233,218	2,283,079	26	87,811	40.40
Oct.	1,847,690	191,673	2,039,363	2,084,894	26	80,188	36.89
Nov.	1,331,029	156,939	1,487,968	1,521,189	26	58,507	26.92
Dec.	1,629,495	129,834	1,759,329	1,798,606	25	71,944	33.19
Total	19,674,879	2,425,779	22,100,658	22,594,079	310	72,884	33.53

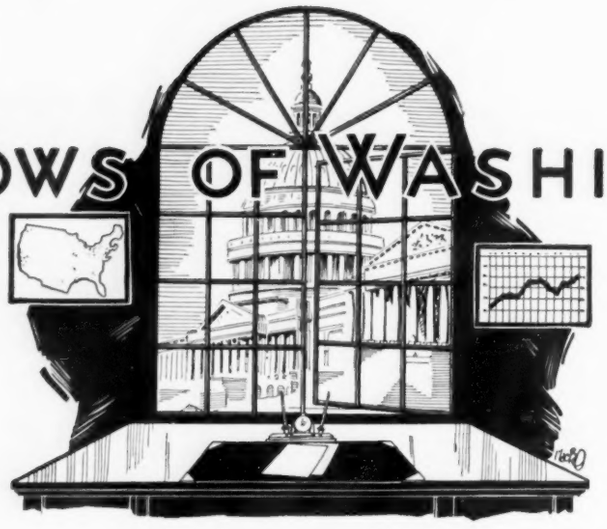
1934

99.39 Per Cent of the Industry Reporting

Jan.	1,786,467	172,489	1,958,956	1,970,979	27	72,999	33.15
Feb.	1,993,638	175,873	2,169,511	2,182,826	24	90,951	41.31
Mar.	2,540,143	203,904	2,744,047	2,760,888	27	102,255	46.44
Apr.	2,622,372	257,482	2,879,854	2,897,529	25	115,901	52.64
May	3,000,624	331,620	3,332,244	3,352,695	27	124,174	56.39
June	2,714,983	282,592	2,997,575	3,015,972	26	115,999	52.68
July	1,343,732	119,869	1,463,601	1,472,584	25	58,903	26.75
7 Mo.	16,001,959	1,543,829	17,545,788	17,653,473	181	97,533	44.30

Crucible and electric ingots not included. Percentages of operation for 1933 based on ingot capacity of 67,386,130 tons as of Dec. 31, 1932. Percentages for 1934 based on ingot capacity of 68,478,813 tons as of Dec. 31, 1933.

WINDOWS OF WASHINGTON



WASHINGTON

FEW ears are more sensitive, politically, than the President's. The applause which marked his journey from Portland to Washington was always generous, at times attaining the proportions of an ovation. The echo of his mellifluent words in picturing the new deal and detailing drought relief measures, resounding with the flaying of publis utilities, was pleasant.

Yet, above this seeming concord, the President could detect a grating sound, and the nearer the presidential special approached Washington the harsher this sound became. The economic pump was still squeaking, despite the billions that had been poured down it the past 17 months. After all the priming, it had not "caught."

So, the triumphal return from Hawaii has not been followed by a gentle resumption of routine duties but, instead, the President has been plunged into a situation with even more serious political implications than the early days of his presidency a year ago. Indeed, it has cast some doubts on the conclusion that recovery has been effected and that the time for reform finally has arrived.

Look for More Pump Priming

There are some in Washington who point to the fact that the production of steel today is barely half what it was a year ago, that carloadings are not the equal of last August, that the decline in business this summer has been more than seasonal, as evidence that the predepression character of business cannot be salvaged. Others rally the same evidence to support their contention that all of the jerry-built reconstruction of the past year must be razed to the foundation and a more solid structure erected.

Notwithstanding the increasing use of the phrase "state socialism," it seems probable that the President will essay more priming of the pump before attempting to install a new one. His Green Bay speech last week was public refutation of rumors that he was turning to the right, but for the present at least more expenditures can be looked for.

The practical fact confronting Washington right now is that a national election, in which all of the house of representatives and more than a third of the senate will be selected, is a scant 90 days distant. The first order of business for the administration is to insure a good working majority in congress. This requires votes, which in turn are predicated upon an amiable state of mind on the part of labor throughout the country.

Try To Entice Timid Capital

Now, through the various relief measures and favorable legislation such as the Frazier-Lemke and railroad pension bills, the "little fellow" has been well taken care of, but what is needed to button up the election is a brisk upturn in business, meaning also in employment, this fall.

Washington believes that seasonal forces will bring some degree of improvement, but in politics even the seasons cannot be trusted and the practical-minded of the inner circle are devoting no little thought to methods by which basic industries can be inspirited.

Take steel for example. There are three ways in which demand for it can be expanded to the point of generating a smashing fall rise. One is to restore the confidence—some in Washington prefer to substitute "the hope of profit" for the term confidence—of private capital so that it will flow freely into channels requiring durable goods.

There is no dearth of money. Indeed, the banks are fairly bursting with it, as evidenced by the recent advertisment of the First National Bank of Englewood (Chicago) offering a mechanical pencil to savings depositors with balances of $100 or less to close their accounts.

Says this bank: "Money has become a burden. Like commodities, it has a value so long as it can be put to some good use. Beyond that point it is of no avail. Not only are we closing the small accounts, but we have discontinued the opening of new accounts until such time as we can safely and profitably invest our excessive cash reserves. Under the regimentation of this so-called new deal, sound industry is afraid to borrow, and, consequently, banks are loaded with idle currency."

Only last week the treasury received subscriptions totaling $108,633,000 for its $75,000,000 18-day discount treasury bills, the rate of interest being 0.12 per cent. The United States is far from being a finished country. Capital appears to be awaiting only a word of assurance of sound currency before undertaking financing or making long-term commitments. Restoration of confidence thus is the first, and by all odds the most important, possibility for releasing enormous tonnages of steel.

Inflation Threat Still Handy

The second agency is for Washington to unleash the threat of inflation and frighten money into commodities. There will always be some doubt whether the unprecedented expansion of 280 per cent in steel production between March and July, 1933, was inflationary buying or a rebound of confidence following the stand for sound banking taken by the President, but the former explanation is the more widely accepted.

For 15 months the President has had ample power, abdicated by congress, for starting currency inflation to a degree that would pale the German post-war program, but he has not exercised more than a small fraction of this power. There has

been no currency inflation and little of the credit type.

There is nothing definite at this time on which to base any expectation of currency inflation this fall as a means of quickening business, except nationalization of silver, but the possibility remains, and the President at the next session of congress will be under increasing pressure from the inflationist group.

Third among the tools the government could employ is an increase in expenditures. Keynes, the British economist, maintains that by spending $350,000,000 monthly for public projects the depression could be beaten, and he has an increasing number of adherents in Washington.

So far as steel is concerned, whatever lift was contained in the public works project has virtually been expended. Only small lots of government-financed railroad track and equipment material is yet to be rolled, and structural steel for public buildings and projects will come out in small dribbles except for several large lots for dams in the West. A PWA project requiring more than five or six tons of reinforcing concrete bars is a rarity nowdays. The emphasis is all upon labor.

Little Steel for Homes

The country will shortly be treated to a tremendous advertising campaign in connection with the federal housing administration's renovizing and modernization program. The average loan, however, is not expected to be much above $1000, of which a third may be for plumbing or other materials, most of which would move off hardware dealers' shelves. Although it is estimated that 16,500,000 homes need renovizing, the actual demand upon steel will be comparatively slight.

Incidentally, James A. Moffett, federal housing administrator and former Standard Oil executive, has visualized creating an organization of not more than 500 to function in a more businesslike manner than any other government relief agency. But the job distributors of the administration see great possibilities in FHA and last week applications for work were being received at the rate of 1000 daily. Washington is all set for an explosion.

The consensus of opinion in Washington last week was that steel, with other basic industries, would experience a moderate upturn this fall.

Without any official support for it, Washington is expectant of a bold move by the President on NRA.

One possible development—and none could be more painful to General Johnson—would be the transfer of code enforcement to the federal trade commission. The immediate effect of this would be to coordinate the enforcement of codes with the principal government body having to do with the antitrust laws, and the charges of monopoly which have been hurled so often at NRA probably would be thoroughly run down.

Were the trade commission to bear directly on the steel code, the steel industry would have to deal with an agency that has been traditionally hostile to it, dating back to the days when monthly cost reports were required and the Pittsburgh basing point case was decided in favor of consumers.

There is considerable influence within the commission for making all iron and steel prices f.o.b. ones and completely eliminating basing points by making every mill a base.

Incidentally, the trade commission now has a hot potato on its hands as a result of the complaint of southern consumers of finished steel against the $3 differential at Birmingham over Pittsburgh.

To adjust the complaint to the satisfaction of the southern consumers would compel the trade commission to fix prices; in other words, the trade commission is called upon to reduce the $3 differential at least to a parity with Pittsburgh if not to undercut it. An influential member of the commission has been an outspoken opponent of all price fixing.

An understandable reaction on the part of NRA is a more kindly feeling toward the industries whose adherence to codes has put them on the spot. For example, NRA feels that instead of working a hardship on the small buyer and tending to lift prices, the filing of a price makes that producer immune to pressure from competitors to raise it.

The fact that the extra dividend of 50 cents a common share by General Motors, only one of a number of large steel consumers, involves the payment of $20,000,000 or $1,000,000 more than the estimated profit for the entire steel industry in the second quarter has provoked some comment in NRA.

RALPH L. HARDING, civil engineer of Cleveland, was appointed chief of the iron and steel division of the bureau of foreign and domestic commerce, department of commerce, Aug. 8, to succeed Luther Becker, head of the division since 1921. Mr. Harding has not yet formally accepted.

A 1905 graduate of Case School of Applied Science, Cleveland, Mr. Harding became resident engineer for the Grasselli Chemical Co., Grasselli, Ind. In 1911 he went to the Philippines as district engineer and engineer in charge of the Manila Railroad Co., later becoming maintenance engineer and traffic superintendent of this government project. After serving in France as a captain in the engineer corps he became associated in 1919 with Wilbur Watson & Associates, this connection having been broken only by a term as service director for Cleveland.

Mr. Becker for six years was sales agent for the Bethlehem Steel Co. at St. Louis and was in the Far East three years for the United States Steel Products Co.

Johnson Only Reprieved

Reverting to NRA, this decision on the future of the organization is expected to be one of the early, important ones by the President. Though General Johnson appears more in favor following helpful action in the San Francisco general and Chicago stockyard strikes, these are only reprieves. His task was codification; that is almost completed.

He has won the implacable displeasure of labor for his comments on the Amalgamated Association of Iron, Steel and Tin Workers; after all that industry has charged up to the general for seeming to be prolabor, it is the irony of fate that organized labor should put the skids under him.

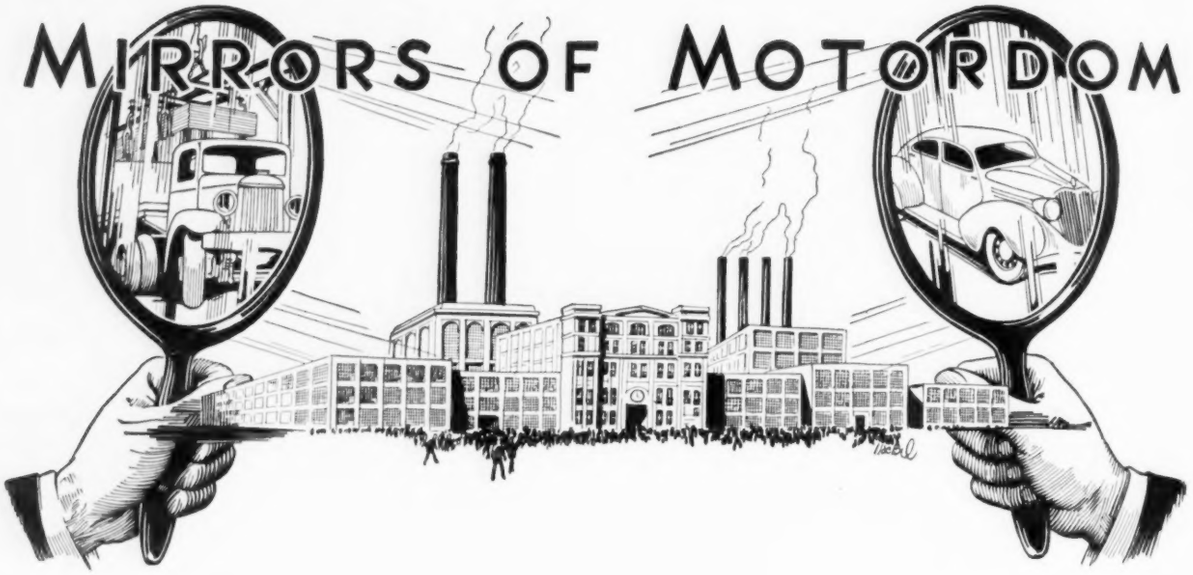
The way NRA is going may be revealed by the general's action on the Harriman mills case, related here last week. Organized labor is insistent that the Blue Eagle be withdrawn a second time and that the matter be re-assigned to Division Administrator Berry, who carries a union card, for final settlement. Last week the executive council of the American Federation of Labor stirred the matter up again.

For a number of weeks NRA has plainly been on the defensive. Succeeding orders have narrowed its scope, especially in the small cities and the small trades. General Johnson himself no longer talks of saving all of NRA—only the good in it. The picture in the industrial advisory board is changing, and an important announcement there has impended for a week; this concerns appointment of salaried, full-time members.

The path of least resistance by the President would be to turn NRA over to the trade commission or greatly reduce its organization, probably

(*Please turn to Page* 17)

MIRRORS OF MOTORDOM



DETROIT

THERE'S a traffic light ahead on the path that the automobile production van is traveling. Steadily blinking a yellow "caution," it apparently has forgotten there ever was such a thing as red or green. And, just as ambiguously guided is the course ahead during August and September for the motor manufacturers.

More unexpected than last week's extra dividend by General Motors is the continuing contra-seasonality of some 60,000-odd different people each week buying new motor cars. In the light of the nosedive other industries, including steel, took in July, plus the aggravation of the widening western drought, not to forget the plummet stock market, many in Detroit say it is nothing short of remarkable.

So, though over 10,000 new car buyers a day may be something to take for granted at the time of year when the sap flows, it just isn't in the blood of the American people in a year like 1934 to keep on buying motor cars at the season when Labor Day is just around the proverbial corner.

Danger in Underestimating

That such inevitabilities are surely shaving the cord holding Damocles' sword therefore makes motordom's head-men instinctively pull in their horns to lay as closely to shore as possible. If you want to give any automobile concern a nightmare, just mention the danger of being caught with an oversupply of cars at the fag end of the year.

Yet, at times such as this an undersupply also carries dynamite. Timidity cannot be 100 per cent. In a competitive market where lines are drawn as closely as they are today among the "big little three"—Ford, Chevrolet and Plymouth—an underestimate of the market is vital and may easily mean quick surrender of leadership.

So, this business of making automobiles is rearing for itself a nice, imposing question mark at mid-August. Truth be told, the clan of automobile executives is completely perplexed. Their prognostications are made even the more jittery by the story of late June and early July.

Then, retail sales suddenly became mired, only to rebound sharply just as unexpectedly. At that level they have held since. Confounded first off by not only how long retail demand for new cars will hold up, complications now take on a deeper shade relative to when and how deep the inevitable ax will slash.

Sales Hold Key to Future Plans

So, for a problem consider this: Retail demand for cars is perplexingly good; the industry's summer letdown is long delayed; industries other than automotive are in an admitted slough. Now, how to hit the mark on scheduling assemblies for the next six weeks beats anything in calculus, blind flying or guessing the ponies.

There are two schools of thought in Detroit today. One says it will keep on building 1934 cars as long as the snap to demand lasts. The other says September will see the cleanup period, October the changeover—both steps in preparation for a cleaner bill of health next January than the production rash the industry broke out with this year.

The answer to both ideas seems enmeshed deep in the intricacies of the tide of retail sales. Their ebb or flow will soon spell the answer.

Meanwhile, in a more tangible light, Detroit knew last week that Ford was working off a 55,000-car month, that Chrysler Corp. was to make 60,000 cars this month and that Chevrolet's last-week sudden step-up from 65,000 to 80,000 cars may or may not turn out to be overly ambitious. Chevrolet last week was steady, with 20,000 units. The mortality of such monthly schedules has been high.

For September, Ford has released material so far for only 25,000 models. It is understood that a Rouge plant shutdown will go into effect either Aug. 24 or Aug. 31 probably until after Labor Day, Sept. 3. This will be for usual inventory and plant rearrangement purposes. Ford output last week was 18,190 units, unchanged.

Last week Chevrolet was releasing materials for 30,000 more models, the assembly of which will fall into next month. Chrysler Corp. had completed a buy the middle of last week covering 32,000 cars. Unless these specifications are augmented, and it's a toss-up that they will or won't be, September can be the slimmest month of the year.

Tool and Die Work Already Let

Back of this picture is the truth coming to light on retooling plans for next year's cars. Contrary to what most Detroit tool and die shops have been given to understand, most of next year's die work has been already let out by such as Fisher Body and Chrysler. In some cases it is completed, with new sources mostly outside of Detroit, garnering a majority of the work.

Twelve months ago, that seem short in retrospect, Henry Ford was having difficulty celebrating his 70th birthday in the wilds of northern Michigan. When newshawks were not hounding him, the Blue Eagle of the NRA was news enough then to guarantee that the black seven-column streamers of every newspaper would scream out his "defiance" of General Johnson and the automobile manufacturer's code.

Because he would comply with, but not sign the code, the progenitor of

Model T sought quiet in his Michigan lodge, surrounded by personal secret service men and even had to travel back to Detroit in the privacy of a Ford Great Lakes iron ore freighter that went off its course to stop at that isolated spot when his vacation was finished. Thus, Henry Ford dodged the country's penchant for seeking out and throwing stones at the lone defier.

But, a year has packed in it sometimes many twists and changes. So, with an August a year ago—and today. Mr. Ford has come to see feet of clay poking out from under mantles of the then Washington idols.

Ripley could have made it a "believe-it-or-not" a year ago, had he guessed that last week would see NRA opening the way to break that deadlock. If the Ford Motor Co. would simply sign a "compliance letter," so NRA ventured early last week, it could bid to the government.

The practical monopoly on small cars and trucks held for months by Chevrolet would be broken. All Ford had to do was to declare affirmatively something he was already doing. Because the country wasn't much interested, this last news went for little. At any rate, Mr. Ford celebrated birthday No. 71 without resorting to his north Michigan seclusion.

New Dissension in Labor Camps

Almost coincidently last week, an unrelated but parallel problem of a year ago at Detroit also broke out afresh. At Hudson, Olds and Pontiac, some 15,000 members of the American Federation of Labor bolted their union, declared against the federation in detail, but in brief as a racket, and moved over to pitch tents with the Associated Auto Workers of America.

Seven thousand jumped the traces at Hudson, six at Pontiac and still another body at Olds. The water of a year ago was definitely flowing uphill as local demands were made that William Collins, national organizer for the A. F. of L. located at Detroit, be removed. Meanwhile, only some 700 patternmakers carried on a desultory strike at Detroit. Of the tool and die group, none has lost greater caste.

Packard Motor took in its belt a notch last week and made public the information that it has been wielding the ax mightily in its plant at Detroit in preparation for the small car.

Confirmed were reports Detroit has been hearing for a long time—that Grand boulevard was to be the invisible line separating Packard unto itself. All old plant facilities north of the boulevard are being rearranged for the Packard lines proper; all to the south for the coming small car to be set up as a subsidiary. Reconciled that the days are gone when it will make 50,000 high-priced Packards in a year, as it did in 1929, Packard has reefed its sails; the mile-long plant has been scaled down and split up—on paper.

Of the plant's former 3,900,000 square feet of space, about 525,000 square feet used to be used for body work. Now, on the north division a setup of only 73,000 square feet will be devoted to the Packard bodies proper—that is, the present eights and twelves. Murray Body will continue to make the custom jobs.

The south plant may soon have its car ready to announce. Facilities are to be set up for production of 100,000 of these cars annually.

That this small low-price model, no doubt to deliver in the $1000-$1200 range, is being thoroughly groomed by parent Packard before unveiling is evident in painstaking personnel work. Many Packard field men are being recalled and reacquainted with the home plant. Detroit hears of many instances of the stress at Packard being laid on the efficiency of plant and field personnel to put the small model across.

The problems of Packard are shared by Lincoln. The Lincoln small car, also in embryo but further removed from the public, will be made at the present Lincoln plant, not at Highland Park. Lincoln has been calling in some parts suppliers quite frequently of late, asking for bids on parts to the small model. Many design details, however, have yet to be settled.

A frame, some 6 to 9 inches longer than the present Ford unit, is being discussed for Lincoln's small car, placing the latter in a wheelbase length of either 118 or 121 inches.

Automobile Production

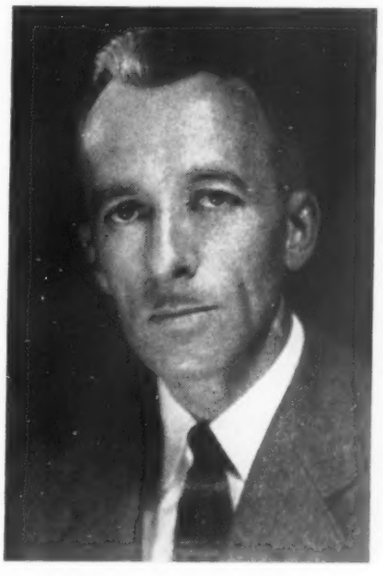
Passenger Cars and Trucks—U. S. only
By Department of Commerce

	1932	1933	1934
January	119,344	130,087	156,907
February	117,418	106,888	231,707
March	118,959	118,002	331,263
April	148,326	180,713	354,745
May	184,295	218,347	331,641
June	183,106	253,387	308,051
July	109,143	229,357	*255,000

*Estimated.

Estimated by *Cram's Reports*

Week Ended	
Aug. 4	58,554
Aug. 11	57,539



W. T. DAVIDSON, for several years in charge of development, research and other technical activities for Struthers-Wells Co., Warren, Pa., has been appointed manager of the machine parts division for the company. This department is making developments in the use of welded plates for machinery bases

Windows of Washington

(*Concluded from Page* 15)

eliminate all references to prices, and leave it an agency for protecting code hours and wage rates.

Collective bargaining under section 7a of the recovery act has come under the protective wing of the new national labor relations board, which intends to do the interpreting by sitting as a supreme court over the regional labor boards it has taken over from the old national labor board.

The steel industry faces the possibility of being confronted with a code with price provisions entirely eliminated. That might lead to a break.

Europe To Supply Mexican Pipe

The 25,000 tons of 48-inch cast iron pipe for which Mexico City has been dickering since early this year has at last been awarded, to the Pont-au-Musson and the Vereinigte Stahlwerke interests abroad.

When this 38.6 miles of addition to the Mexico City waterworks was first bid, a Japanese house was low at approximately $20, c.i.f. Manzanillo. An English maker bid $24.87, c.i.f. Gulf ports, other European foundries about $25 and American foundries from $27.80, f.o.b. Birmingham to $32.20 c.i.f Laredo, Tex.

The award was made to the Japanese house following its posting of a bond of $200,000. An American authority at the time forecast that no maker of cast iron pipe could fulfill the contract, especially considering the numerous inspections at the foundry, at the point of water delivery to Mexico, and finally on the job.

Following the Japanese withdrawal in May new bids were taken, and the pipe now will come from Europe.

Industrial Men in the Day's News

Assume New Posts with Wickwire Spencer Steel Co.

EDWIN C. STOUT has been appointed sales manager of the eastern district of Wickwire Spencer Steel Co., New York. Formerly sales manager of the springs and specialties division at New York, he first became affiliated with the steel industry in 1908 as clerk in the Baltimore office of the American Steel & Wire Co. In 1914 he became assistant sales manager and six years later joined the Wickwire Spencer organization, representing the company in Ohio. In 1924 he was transferred to New York to the post noted above.

PERCY JENKINS has been appointed New England district sales manager for the company, with offices at 80 Webster street, Worcester, Mass. He has been associated with the company for about 10 years, or since his graduation from Harvard university, Cambridge, Mass. He has had direct mill experience in the company's Massachusetts plants, later becoming assistant sales manager of the mechanical specialties sales department. For the past year he has served as acting sales manager of the eastern district.

CHARLES M. REESEY has been made advertising manager of Cincinnati Milling Machine Co. and Cincinnati Grinders Inc., Cincinnati, succeeding Frederick B. Heitkamp who as announced in STEEL for July 9 recently resigned as general sales manager of these companies to become associated with Lyon Metal Products Inc., Aurora, Ill. Mr. Reesey has been assistant to Mr. Heitkamp for the past six years, previous to which he was active in shop time-study and planning departments. He has served as both secretary and vice president of the Cincinnati Association of Industrial Marketers.

□ □ □

Lee Landon, assistant manager of the Elwood, Ind., plant of the American Sheet & Tin Plate Co., has been transferred to the Gary tin plate plant of the same company, effective Aug. 16. In his new position he will be assistant to Thomas O'Brien, formerly of the Elwood plant. Mr. Landon became affiliated with the Elwood plant in 1906 as resident engineer. He removed to the Wheeling district for a few years and then returned to Elwood. Five years ago he was made manager of the New Kensington, Pa., plant, which was closed the early part of 1932, when he returned again to Elwood.

□ □ □

W. A. Irvin, president, United States Steel Corp., has been chosen a member of the advisory committee of the American Standards association, New York. Other new members are Gerard Swope, president, General Electric Co., and Sewell L. Avery, a director of the Steel corporation.

□ □ □

James C. Vignos is now with the sales division of the Ohio Ferro-Alloys Corp., Canton, O., assigned to the eastern district. Graduate of Notre Dame university, South Bend, Ind., for the past eight years he has devoted his efforts to the metallurgical and chemical branches of the iron and steel industry, specializing in the production of alloys of iron and steel, high-strength cast irons and special alloy irons.

□ □ □

Oscar E. Berg has been made district sales manager at Houston, Tex., for Allegheny Steel Co., Brackenridge, Pa.

□ □ □

C. A. Tirado has been placed in charge of the recently-established industrial division of the Diamond Metal Co., Houston, Tex., manufacturer of hardfacing metals.

□ □ □

G. H. Burkholder, formerly of Philadelphia, has been appointed western sales manager of the positive drive division of Link-Belt Co., Chicago, with headquarters at the company's Dodge plant in Indianapolis.

W. H. Kinkead has been named manager of sales of Link-Belt speed reducers, with headquarters in Philadelphia. He succeeds Mr. Burkholder.

G. L. Gansz succeeds Mr. Kinkead and will handle sales of the positive drive division in the Philadelphia office.

□ □ □

U. G. Miller, Frank Garratt and J. O. Rinek have been elected vice presidents of the Universal Steel Co., Bridgeville, Pa. Mr. Rinek has been elected to the board of directors

A. B. Peterson

Who as noted in STEEL for July 23 has been named a director of the Federal Tool Corp., Chicago, also to take charge of sales engineering activities

also, which already included Messrs. Miller and Garratt.

□ □ □

H. M. Rosevear has been placed in charge of the sales office recently opened in Tulsa, Okla., by Wyatt Metal & Boiler Works, Dallas, Tex.

□ □ □

Joseph A. Coy has been appointed sales manager for the Star Mfg. Co., Okahoma City, Okla., manufacturer of steel tool houses, with headquarters in Tulsa, Okla.

□ □ □

William P. Witherow, president of Steel Products Corp., Pittsburgh, and also prominent industrial and civic leader in Pittsburgh, has been appointed resident member at Washington for the NRA industrial advisory board.

□ □ □

J. E. Archer, for four years associated with Prof. Colin G. Fink at Columbia university, New York, has been appointed to the staff of Battelle Memorial institute, Columbus, O., and assigned to work on electrodeposition problems, such as bearing alloys.

□ □ □

Miles C. Smith, for several years manager of sales promotion for the Stoody Co., Whittier, Calif., manufacturer of welding rods and equipment, is now associated in a similar capacity with the Rich Mfg. Co. Ltd., Los Angeles. The company has arranged to take over the manufacturing and marketing of welding machinery, rods and electrodes formerly handled by the Karl Strobel Corp.

S. A. E. Begins Revision of Steel Specifications

The Society of Automotive Engineers now is undertaking general revision of its steel specifications, a program which marks complete modernization of one of the most valuable set of standards ever issued.

Despite continued acceleration in the use of S. A. E. steel specifications in a variety of industries as well as in the automotive field, development of new alloys and changes in others have made general survey of the whole group desirable. Important in the contemplated revision will be the addition of specifications on carbon series with higher manganese content, on nickel-chromium steels, and on nickel-chrome-molybdenum alloys.

Special attention also is being given to some of the cast-iron specifications, particularly those relating to cast iron generally used in cylinder block construction and electric furnace iron.

The work is expected to be completed along about the end of the year.

Died:

LOUIS F. NAGLE, 66, general sales manager of the Central Iron & Steel Co., Harrisburg, Pa., in that city, Aug. 2, after a week's illness. Born in Pottstown, Pa., he graduated from the Arms academy there and from the National College of Commerce, Philadelphia. His business career began with the Glasgow Iron Co., Glasgow, Pa., where he was active for about 10 years.

He then became affiliated with the

Louis F. Nagle

Worth Bros. Co., Coatesville, Pa., serving as general sales manager and purchasing agent for 19 years. Upon the absorption of this company by the former Midvale Steel Ordnance Co., he removed to Pottstown and established the Nagle Steel Co., which operated for a period of 10 years. In 1924 he became associated with Central Iron & Steel and shortly afterward was made general sales manager. He was especially well known in the steel plate industry.

Outside of business activities, his choral and orchestral accomplishments won him much popularity in church affiliations.

Edwin Corning

□ □ □

Edwin Corning, 50, for 20 years president of the Ludlum Steel Co., Watervliet, N. Y., and since 1930 chairman of the board, in Bar Harbor, Me., Aug. 7, after a lengthy illness. Following graduation from Yale university in 1906 he became affiliated with the Ludlum Steel & Spring Co., in which his family was interested financially. The business dated back to 1854 and originally was located in Pompton, N. J., but was transferred in 1907 to a new plant at Watervliet, Mr. Corning being named president in 1910. It was his decision that brought about the company's abandonment of the crucible method of steelmaking and the inauguration of the all-electric-furnace manufacture in the alloy steel field. Under his direction the Ludlum company designed and built its own electric furnaces and the organization became one of the first steel manufacturers to feature electric furnace quality steels alone.

In 1915, under Mr. Corning's direction, sales had more than quadrupled, new financing had been arranged and the plant capacity doubled. In this year the name was changed to its present form. Later the company became active in the stainless field. In 1930, after the purchase of the Atlas Steel Corp. plant at Dunkirk, N. Y., he became chairman of the board. He was a power in New York state Democratic politics, serving as lieutenant-governor under Alfred E. Smith.

□ □ □

E. Starr Hauck, 57, vice president of the D. Wilcox Mfg. Co., Mechanicsburg, Pa., in Carlisle, Pa., Aug. 5.

□ □ □

Joseph E. Whitten, 70, formerly general superintendent of the wide bandsaw department of E. C. Atkins & Co., Indianapolis, at his home there recently. He was associated with the company for 30 years, retiring in 1932.

Takes Over Welding Line

Rich Mfg. Co. Ltd., 3851 Santa Fe avenue, Los Angeles, has taken over manufacturing and marketing of welding machinery, rods and electrodes of the Carl Strobel Corp., Los Angeles. New applications of alloy welding rods are being developed.

EDITORIAL

New Deal Is Inconsistent on Decentralizing Industry

SPOKESMEN for the new deal have talked so enthusiastically about "decentralizing" industry, that the public is entitled to a clear-cut statement of the government's policy. Millions of dollars are being spent in projects which, if successful, will exert at least a temporary influence upon the geographical distribution of industry. Before too much money is sunk in these experiments, it would be well to weigh the ultimate results carefully.

It is safe to say that the majority of competent opinion favors decentralization in principle. The real questions at issue are those of method.

Apparently the new dealers believe it is the function of the federal government to accomplish decentralization by means of projects such as the Tennessee Valley experiment, the Arthurdale, W. Va., settlement, the other subsistence homesteads, etc. If this is to be accepted finally as the approved method, there will be no end to the encroachment of the government upon private enterprise.

Many Economic Factors Complicate Problem of Controlling Migration of Industrial Units

Moreover it is doubtful whether the government realizes the complications which will grow out of the attempt to decentralize by this arbitrary method. Economic factors such as natural wage rates, transportation costs, proximity of raw materials and markets, etc., heavily outweigh the force of government dictums. Are the new dealers prepared to battle these natural forces in order to remake the industrial map? These artificially created settlements cannot succeed over a long period of time unless all industry is regimented.

In order to illustrate one of many difficulties, consider the problem of wages. From the very beginning of the new deal, high officials of the government have attempted to break down geographical wage differentials. Secretary of Labor Perkins tried unsuccessfully to impose a few wage rates instead of the 21 proposed by the steel industry.

A better illustration is afforded by the new deal's treatment of the code of the structural steel and iron fabricating industry. The industry submitted a schedule of graduated minimum rates for common labor. In District No. 2, comprising the East North Central region, the proposed rates were 40 cents for Pittsburgh, Cleveland, Youngstown, Detroit, Akron and Wheeling; 37 cents for Toledo, Canton, Dayton, Massillon, Flint and Lansing; and 35 cents for all other localities in the district.

NRA arbitrarily wiped out this schedule, proposed a flat rate of 40 cents for the district, and now is trying to jam it down the throats of the fabricators. At the same time, it erased the differentials from the six other wage districts.

Speaker Henry T. Rainey has interested himself in a similar case in Illinois. One of his constituents, in a town of about 300 population, is held by his code to a 40 cent minimum. He wants to return to the old scale of 20 to 25 cents, and Speaker Rainey, knowing the local conditions, supports him in this plea.

Action of NRA on Wage Rates Nullifies New Deal's Attempts To Decentralize

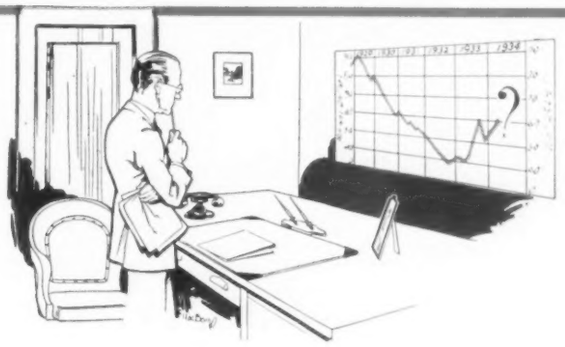
The point is that NRA is trying to force manufacturers in small towns to pay rates as high as those prevailing in the largest cities. This is unfair, because the cost of living is lower in the smaller communities. In 1928 the National Industrial Conference board figured that the minimum cost of maintaining a fair standard of living for a family of four was $31.92 per week in New York, $31.31 in Philadelphia and $31.30 in Boston; as compared with $30.13 in Lockport, N. Y.; $27.87 in Butler, Pa.; and $28.05 in Leominster, Mass.

This shows a slight advantage in favor of towns of 20,000 to 30,000 population as compared with metropolitan cities. A study of the cost of living in smaller towns—say communities of less than 10,000—would show a much larger spread in comparison with that of cities of 500,000 or more population.

If the new deal is sincerely interested in decentralizing industry, it can make some headway immediately by correcting its NRA wage policy. As a matter of fact, American industry was making encouraging strides toward decentralization before the new deal stepped into the picture. According to the United States census, the number of wage earners in the East North Central district in communities of over 10,000 population decreased sharply in the period from 1919 to 1925, while the number in communities of less than 10,000 increased 19.8 per cent in the same period.

Decentralization may be stimulated by intelligent action, but it cannot be helped by an administration that spends money aimlessly on one hand, while NRA, on the other, is doing everything possible to discriminate against the small towns.

THE BUSINESS TREND



Will New Deal Again Revise Its Policy on Prices?

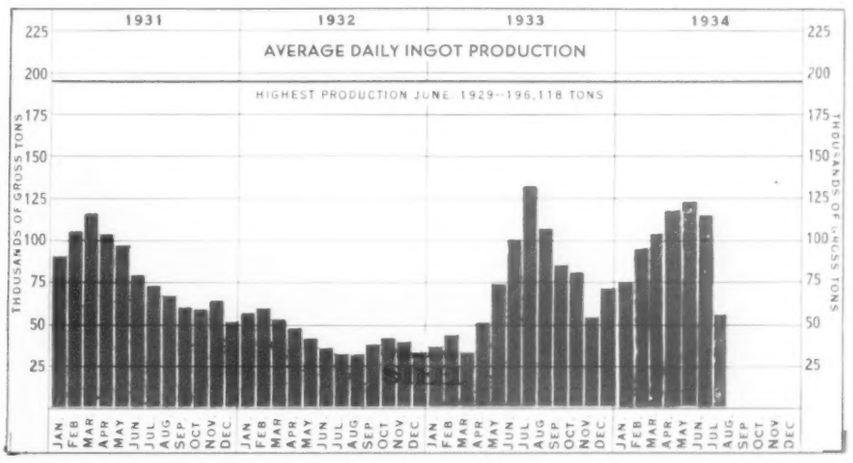
TO DATE the most noticeable effect of the drought upon business is the sharp rise in commodity prices. If the present trend continues for several weeks, the nation may be confronted with another gradual revision of price philosophy.

It will be remembered that the early conception of recovery measures under the new deal was based upon higher prices. The administration frequently mentioned 1926 levels as the goal. This objective seemed to prevail for about 10 months. Then, when objections to price control began to mount the government silently withdrew from its espousal of higher prices, and gradually exerted pressure for lower prices.

Right now the new deal price policy is extremely confusing. The famous executive order authorizing lower prices on government work, together with the weakening of code influence on prices, seems to place the administration definitely on the side of lower prices. Yet it still is sponsoring higher wages. Should the drought continue to give strong impetus to higher commodity prices, the new deal may be forced to again reverse its policy. Unless this happens, a readjustment of wages to lower levels will be inevitable.

Signs Hint That Low Point in Industrial Activity May Have Been Passed

Industrial activity has changed only slightly since the middle of July. Since Aug. 1 a few scattered signs of improvement have developed, but they lack positiveness. Revenue freight car loadings have declined only moderately. Electric power output still remains above comparable 1933 levels. Consumption of steel is exceeding production, and steelworks operations seem to be pointed toward slightly higher levels, although the movement is erratic. Evidence of more plant expansion and improvement of equipment is coming to light. Since this indicates the investment of private capital, it may be significant. The action of large corporations in this respect in the next few months may be worth watching closely.



1934	Tons
July	58,903
June	115,999
May	124,174
April	117,425
March	103,600

1933	Tons
July	126,734
June	98,632
May	73,201
April	53,817
March	33,268

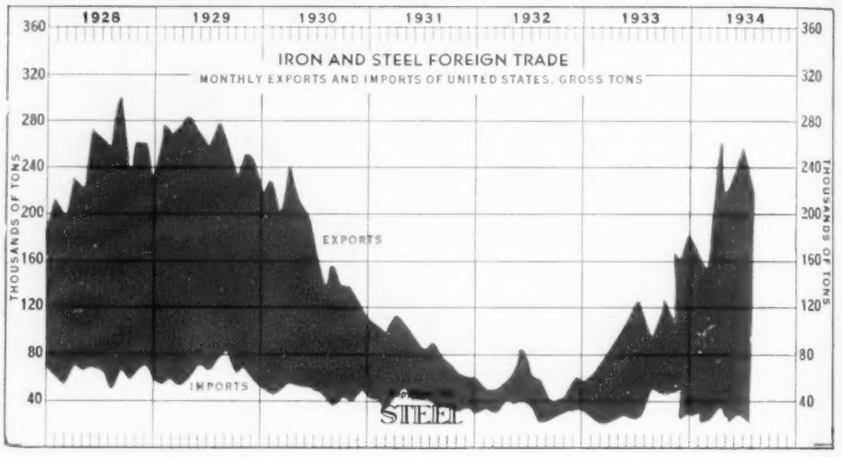
	Tons
July, 1934	39,630
June, 1934	64,563
July, 1933	58,108

Iron Output Down Sharply in July

The average daily output of coke pig iron in the United States dropped sharply in July to 39,630 gross tons, a loss of 24,933 tons, or 38.7 per cent from the 64,563-ton rate of June. The July rate was the lowest average daily production since last January when the rate was 39,537 tons. The rate in July one year ago, was 58,108 tons per day. July was the second consecutive month to register a loss, the June output having dropped 1807 tons per day from the 66,370-ton rate of May.

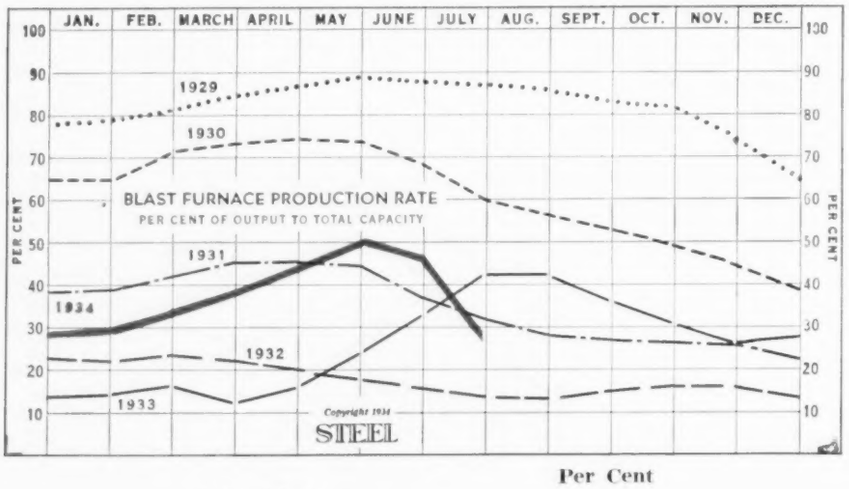
Iron and Steel Export Trade Shrinks During June

United States export trade in iron and steel products during June showed a decline of 22,347 tons from the preceding month with a total of 219,406 tons. In spite of this shrinkage the June total was the largest for the half-year except for March and May, and compares with 102,581 tons for June, 1933, a gain of 113.9 per cent. According to compilations of the iron and steel division of the department of commerce, imports declined to 24,858 tons, the lowest level since January and comparing with 34,368 tons imported in June, 1933.



Exports	Tons
June, 1934	219,406
May, 1934	241,753
June, 1933	102,581

Imports	Tons
June, 1934	24,858
May, 1934	29,465
June, 1933	34,368



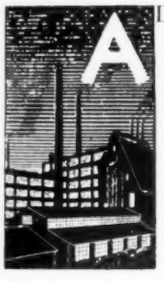
	Per Cent
July, 1934	28.4
June, 1934	46.3
July, 1933	42.4

74 Furnaces Active on Last Day of July

With iron output in July registering the second consecutive recession, 18 more blast furnaces were blown out or banked, bringing the total of active furnaces on July 31 down to 74. Relating production to capacity, the operating rate for July was 28.4 per cent, as compared with 46.3 per cent in June and 47.5 per cent in May. In July, 1933, the rate was 42.4 per cent. The loss of 18 active stacks in July and 25 in June—43 in two months—represents an unusually sharp curtailment.

Interesting camera study of night illumination at a steel plant in the flats district of Cleveland

INDUSTRIAL ILLUMINATION— ECONOMIC AND HUMANITARIAN ASPECTS



ADEQUATE lighting for industrial operations is a problem involving both economic and humanitarian factors; a problem which in the past four years has received little attention due to depressed conditions of business, yet one to which lighting engineers are applying every effort with a view to working out a clearer solution. In the discussion which follows an attempt will be made to review progress in industrial lighting, to point out how and why the plant operator should reawaken his interest in lighting, and to portray some of the work being done in lighting laboratories seeking to penetrate the wilderness which has surrounded the subjects of lighting and seeing, and their relation to expenditure of human energy.

In the decade from 1900 to 1910, lighting in industry was in the novelty stage—a new product, the mazda lamp, had been made available; it was being installed more or less indiscriminately. From 1910 to 1917 or thereabouts, engineers entered the picture and attempted to put lighting on a design basis, introducing the use of reflectors and calculating such factors as spacing-mounting height ratios and the like. The next step, from 1917 to 1922, was the realization of the value of productive intensities of lighting; that is, by increasing the level of illumination, production was stepped up in greater proportion than the increased cost of more light.

The era of so-called productive intensities was concerned mainly with general lighting for large interiors and it was not until 1922-1930 that the idea of tailor-made lighting, or suiting the light to the particular visual task at hand, germinated successfully. This was a natural refinement in the steadily growing science of lighting which, of course, even at the present time has not been abandoned. But, about 1930, came the first signs of a new era in lighting—the age of seeing—or perhaps more properly expressed as the development of a new science of seeing. Dr. M. Luckiesh, director of the research laboratory of the Nela Park engineering department of the General Electric Co., Cleveland, and his associate, Frank K. Moss, have been instrumental in developing this new science which today is making "seeing specialists" of erstwhile illuminating engineers.

Lighting engineers in other

BY A. H. ALLEN
Associate Editor, STEEL

words have turned to the humanitarian side of their task. They asked: How and why do people see? What effect has light on conservation of human energy? Should not industry recognize the value of adequate lighting, both from the standpoint of insuring accuracy in visual tasks, and of eliminating unnecessary eye fatigue on the part of employes performing these visual tasks? Later discussion will consider these factors in more detail.

Of particular interest today are special lighting applications for industrial processes. In consideration of this fact, Messrs. James M. Ketch, Walter Sturrock and K. A. Staley, of the Nela Park organization, prepared and presented recently before a meeting of the Illuminating Engineering society a paper on this subject. The following discussion presents some of their observations.

Coincident with research in seeing has come the development of ten lighting principles which have specific application to problems of inspection processes involving severe visual tasks. Proper artificial lighting for industrial processes is an essential, primarily from the standpoint of permitting careful inspection of manufactured products. For different classes of products the problems of inspection vary and accordingly the lighting requirements vary. To meet these requirements the value, flexibility and general adaptability of artificial illumination are well recognized, particularly in view of the availability of a broad line of equipment which makes it possible to obtain almost any desired type of light distribution, diffusion and quality.

Usual applications of artificial light to problems of inspection, however, have been made largely by raising the foot-candles (unit of light intensity) of illumination with the increasing difficulty of the visual task. The general feeling exists that if a lighting system is inadequate for the job, or that flaws and defects are not easily seen, the solution is to change the reflecting equipment or to obtain more diffusion. The value of greater diffusion as it affects the ability to see details, reduce eye fatigue, and soften shadows is well known and in general its attainment is worthwhile. However, in the inspection field there are several other characteristics that are found to be equally as valuable as high levels of illumination and diffusion.

Recognizing the various properties of both reflected and transmitted light, or radiant energy engineers have compiled ten principles for using them in inspection work. These principles cover foot-candles, color, quality, diffusion, direction and the like, as related to general classes of flaws, defects and imperfections.

(1) *Illumination level:*

Seeing is a function of four factors: The amount of light or brightness of the object seen; the contrast between any detail and its background, or any object and its surroundings; the size of the detail; and the time available, or necessary, for seeing. These factors are significant in problems of inspection encountered in many industries today.

In general, good diffusion and a reasonably even level of illumination on the work are desirable. Some operations require a high degree of diffusion, such as can be obtained only by specially designed equipment. Others will require no more than that obtained from standard commercial reflectors. The amount of diffusion and brightness of the luminaire desirable for the inspection of highly polished objects depends upon the area of the object.

Fig. 1—Large lighting units of low brightness in a plant manufacturing polished metal plate

. . . . . Is your plant well lighted? Do you know that intelligent illumination will cut production costs, insure efficient inspection and facilitate visual tasks for employes? The accompanying article and two more to follow present an authoritative review of recent progress in industrial lighting and a glimpse into a new science, the "science of seeing."

Size Is Determining Factor

For small objects, such as needles, a clear lamp in an open reflector would furnish ample diffusion; for inspecting polished objects the size of razor blades and roller bearings a greater diffusion, such as would be produced by frosted lamps or stippled cover plates, would suffice; oujects up to a foot in diameter should have brightnesses no greater than that of white bowl lamps in open reflectors, or glassteel diffusers; larger areas, such as tin plate, stainless steel sheets and the like, which require the reflection of the luminaire brightness over a comparatively large area should employ special equipment for obtaining large areas of low brightness.

Fig. 1 shows the lighting system in a plant manufacturing polished steel plate. The lighting units are of special design to provide a low-brightness source for reflecting in the surfaces of the polished plate. These units are made of aluminum and are trough-shaped, each equipped with five 750-watt lamps. The bottom of each unit is covered with ordinary white tracing paper to diffuse highly the light and eliminate the hazard which would be present if diffusing glass were used. Each unit is 10 feet long, 3 feet wide, and

mounted 42 feet above the floor. To facilitate lamp renewals, the units are suspended on disconnecting hangers for raising and lowering, and the individual lamp sockets are installed on small removable disks.

Applications of high-intensity lighting are many and include the inspection of practically all types of objects for accuracy of machining, shape, contour, form, location, assembly, adjustment, size and contrast.

(2) *Color and spectral quality of light:*

Appearance of a colored object is influenced by the spectral quality of the illumination under which it is viewed. Accordingly, certain inspection processes that include the matching of colors require a careful selection of the light source as regards its spectral quality.

Much weight has been given to the use of a north skylight quality of illumination as a standard under which to match colors; likewise, much has been said regarding noon sunlight and average daylight. The color of daylight, including all of its variable colors with time of day and year, can be matched closely by artificial illumination employing suitable absorption screens. It would be presumptuous to say that any one color quality in the range available was best for inspection purposes because much depends upon the individual preferences of the inspectors as well as the character of the materials and colors being inspected.

(3) *Direction of light—luminaire position:*

Surface flaws; irregularities in surface shape; and small flaws such as pits, scratches and cracks in materials usually are seen most easily by lighting which control the direction of the light beam on the location of the source.

Small flaws on matte and nonspecular surfaces are shown by the shadows cast from a beam of light striking the surface obliquely. The shadows also may be accentuated by the highlights produced on the rounded edges of the irregularities nearest the light source. Many standard systems of lighting not particularly designed for this type of inspection produce these effects unintentionally because of the position of the work with respect to, or the nearness to, a light source in the work areas.

In general, the best lighting conditions for seeing small surface flaws on nonpolished materials are produced by a lighting unit having little diffusion, which is positioned properly to cast the shadows and highlights. If the material is at all polished the light source should be positioned—probably to the right or left of the line of vision—to relieve inspectors from any specular reflection which would be uncomfortable and which might actually conceal small flaws.

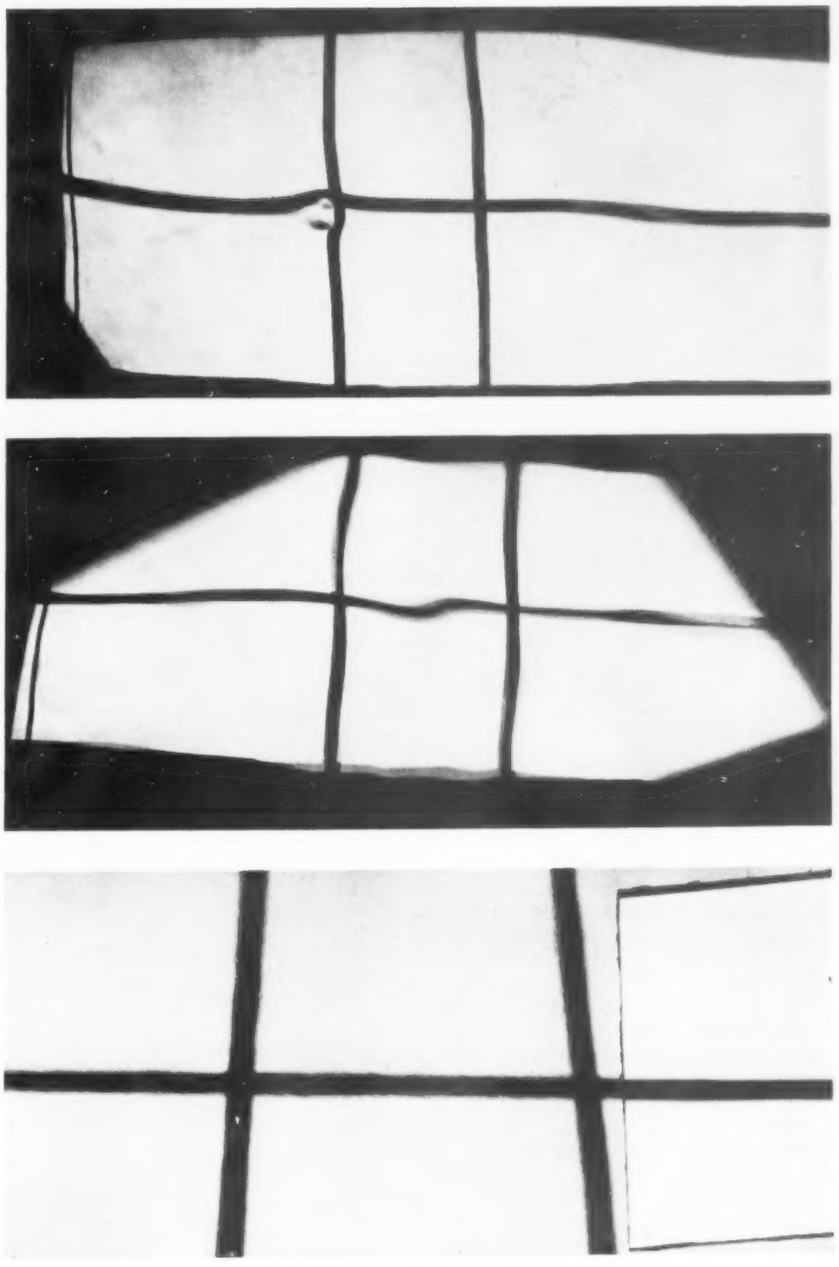


Fig. 2 (Top)—Whorls or distortions in the reflected black strip on the light source help to locate small dents and dings in polished surfaces. Fig. 3 (Center)—Irregularities in contour, such as may occur in any flat glossy surface, can be detected by the wavy appearance of the black strip reflected in it. Fig. 4 (Bottom)—A comparison of the reflected strip in the perfect mirrored glass surface at the right, with that in an imperfect surface which contains scratches and polishing marks

Another application that requires careful positioning and control of the reflection of the light source is for the inspection of highly polished surfaces for small flaws and irregularities. Here advantage is taken of the reflected image of the light source itself. The unit should be located so that its reflection can be seen in the work and of a size large enough to cover the area being inspected. Its brightness must be low so that it is neither uncomfortable nor conceals the flaws to be seen.

Inspection of large polished or glossy surfaces such as chromium plate, stainless steel, aluminum and others, for surface imperfections usually is facilitated by looking at the images of light and dark bands reflected in them, as shown in Figs. 2, 3 and 4. These imperfections can be deteced in the following manner:

1. Dents, dings, seeds and the like, can be located by whorls

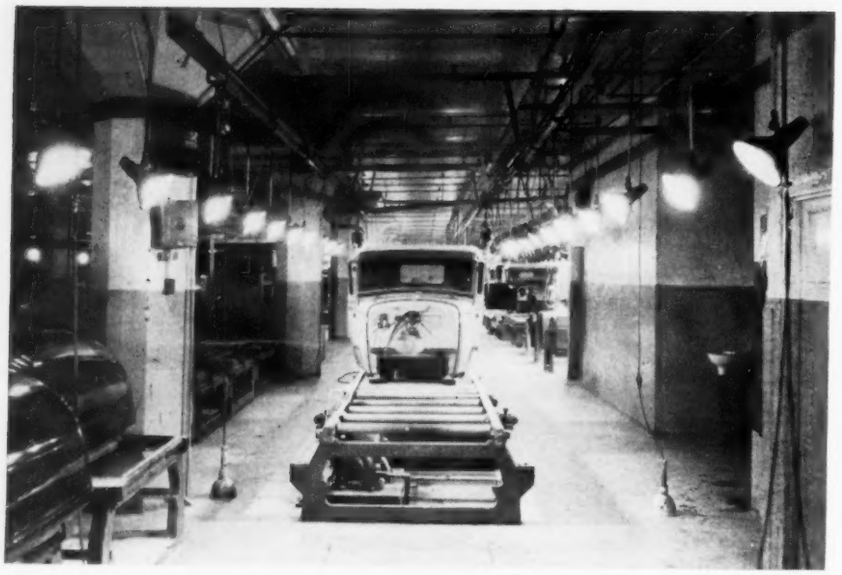


Fig. 5—Application of special or localized lighting on conveyor line in automobile plant

or distorions in the bands, as shown in Fig. 2.

2. Irregularities in contour are revealed by changes in curvature of the bands, as shown in Fig. 3.
3. Scratch marks and flaws in the grinding and polishing of metals preparatory to plating show up as small hairline distortions or waviness in the edges of the reflected bands noted in Fig. 4.

It is especially easy to find such imperfections when there is a movement of the line or band across the surface such as might be produced by a movement of either the piece being inspected, or the inspector's head. A practical application of these principles is illustrated in Fig. 5 which shows the body finish inspection of the conveyor line in a large automobile plant.

(4) *Diffusion*

While lighting engineers long have realized the value of diffusion in lighting and have put it to good use, it has been applied more because of its quality characteristics—protection to eyesight, elimination of glare and softening of shadows—than because of its application in producing reflected images in polished metal surfaces.

It is unusually difficult to see certain defects that appear in many polished or plated metal surfaces under good standard interior lighting, or even under good natural lighting, because the mirror-like surfaces which faithfully reflect every light source, difference of brightness in the interior and images of walls, windows and machines, conceal the flaws that must be seen. Some of the more important defects, such as those caused by inadequate plating, appear as very slight color differences.

Chromium, for example, usually is plated over nickel. The former has a bluish tint; the latter a yellowish one. These color differences, almost undiscernible in newly plated pieces, would find little objection if those color differences remained unchanged. However, when the unprotected nickel tarnishes and the chromium does not, the color difference becomes apparent. Again, when buffing pieces that are nickel-plated on brass, the wheel may cut through the plating on a corner, or high spot, to the brass base. Since newly buffed brass is almost as white in color as nickel, the spot which is cut through is hard to find and it is often weeks later that the brass darkens and shows the spot to a disadvantage. To a lesser degree the same inspection problem occurs where nickel is plated on copper or copper on iron.

These difficulties are typical in the entire plating industry and there are many unsatisfactory plating jobs being turned out today because the inspection is done under standard lighting conditions and without due respect for the difficulty of the visual task.

The best lighting for this work obtains under complete diffusion—diffusion such as would be obtained if the inspector could work on the inside of a huge opal glass ball lighted from the outside. While this setup would be impracticable, an approach to that ideal has been made by several methods. One involves the use of a large booth or tunnel in which one or more men carry on inspection work on polished and plated metals. The objective in lighting effect is common in the design of all: Complete diffusion; as few differences in brightness as possible; and no high brightness images to be reflected in the surface. Both unmodified and daylight quality sources of light have been used satisfactorily; however, the preference of most inspectors seems to be for an illumination but approaches daylight in color quality.

While detection of color differences is of first importance in the inspection of plated metal parts, there are other surface imperfections of a different character such as pits,

(*Please turn to Page 50*)

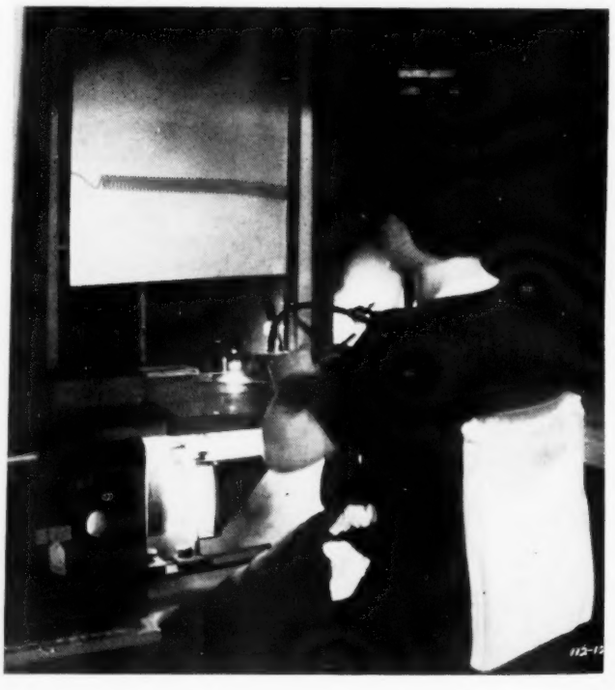
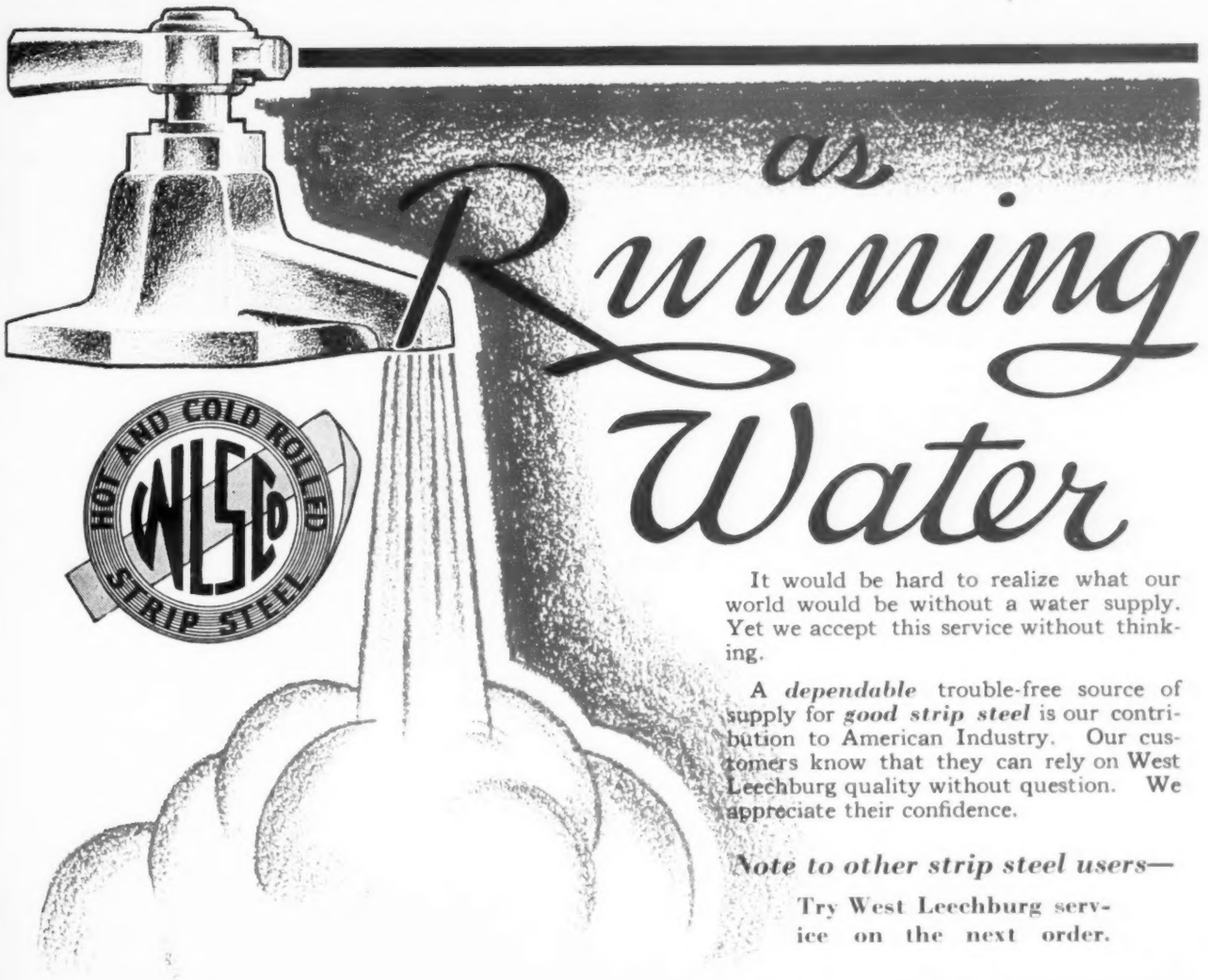


FIG. 6—Use of projection machine and microscope objective lens in inspection of lamp filament coils, image of which is seen on screen, greatly magnified

DEPENDABLE



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How Traffic Signs Are Cut, Painted, Mounted and Maintained

Fig. 2—Cleveland's department of public safety makes up 30,000 to 40,000 traffic signs each month. These are but a few of many varieties

CONSUMPTION of steel in connection with the regulation and control of traffic is a growing market. Cleveland, a city of about 1,000,000 population, annually makes up between 30,000 and 40,000 steel signs for all sorts of traffic regulatory applications.

Legends on them read Stop, Deliveries Only, No Parking Day or Night, No Stopping or Parking, No Parking Here to Corner, No Left Turn, Keep to the Right, Parade Here Today, Detour, Not a Through Street, Slow, Restricted Thoroughfare, Hospital, and many others.

Some have the shape of a shield, some are octagon, rectangular and square, but most of them are round.

All of them are of 14-gage galvanized steel sheets. The Department of Public Safety Repair Shop owns a set of dies for pressing out disks 15 and 18-inches in diameter; it does not do the press work itself but furnishes the dies to contractors who stamp out the disks. The dies are for 18-inch disks and rings are placed in them so that 15-inch disks may be cut with the same dies. Most of the traffic signs are on these round disks.

Shield-shaped signs are cut from 22 x 28-inch rectangular galvanized sheets. The outline of the shield is drawn on a blank with pencil and then the shield is cut out by means of a hand-operated, rotary sheet shear of the corrugated cutting-disk type.

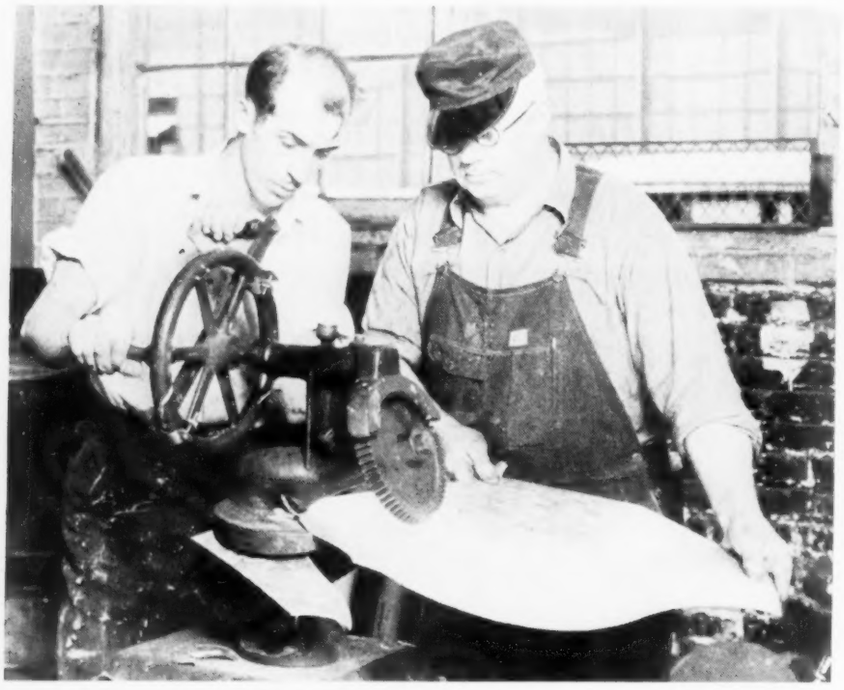


Fig. 1—Some of the signs are shield shaped. These are cut out on a rotary shear

The first operation in preparing the signs is to dip them in primer paint and then in red paint. The paint used is baking enamel, but the drying is done simply by exposure to the air. After they have dried, the white police shields are painted on and the signs again dried. Next the letters are put on in blue paint and, after a final drying, the completed signs are ready for service.

Painting is done by means of a squeegee which presses the paint through a stencil made by pasting silk on a layer of oil paper in which the lettering has been cut. A hot flatiron is employed for smoothing and drying the stencil. The stencils are carefully cleaned with gasoline after being used and have a long life.

Signs Wear Out in City

Traffic officials in Cleveland have made some interesting observations as to the life of these traffic signs. In some of the manufacturing and congested sections, the signs must be replaced after three months. Fumes from sewers are held chiefly responsible for such rapid corrosion. Smoke and soot from factory stacks also are factors in causing short life of signs. It has been noticed that in the outskirts where the air is free of noxious elements, the life of the signs is much longer.

The department some years ago tried out chromium-plated signs. They cost more, but did not live longer than ordinary painted, galvanized, steel signs. Enameled signs were tried out sometime back but they cracked in service and became faded.

TREADWELL ◆ ◆ ◆

is set up to Engineer and Build all types of Steel Mill Equipment

◆ The equipment shown below is an example of the special machinery manufactured by Treadwell.

◆ It illustrates the complete facilities and the engineering ability available.

Whenever you have a specific job, an idea or a production plan involving special equipment—let Treadwell work with you.

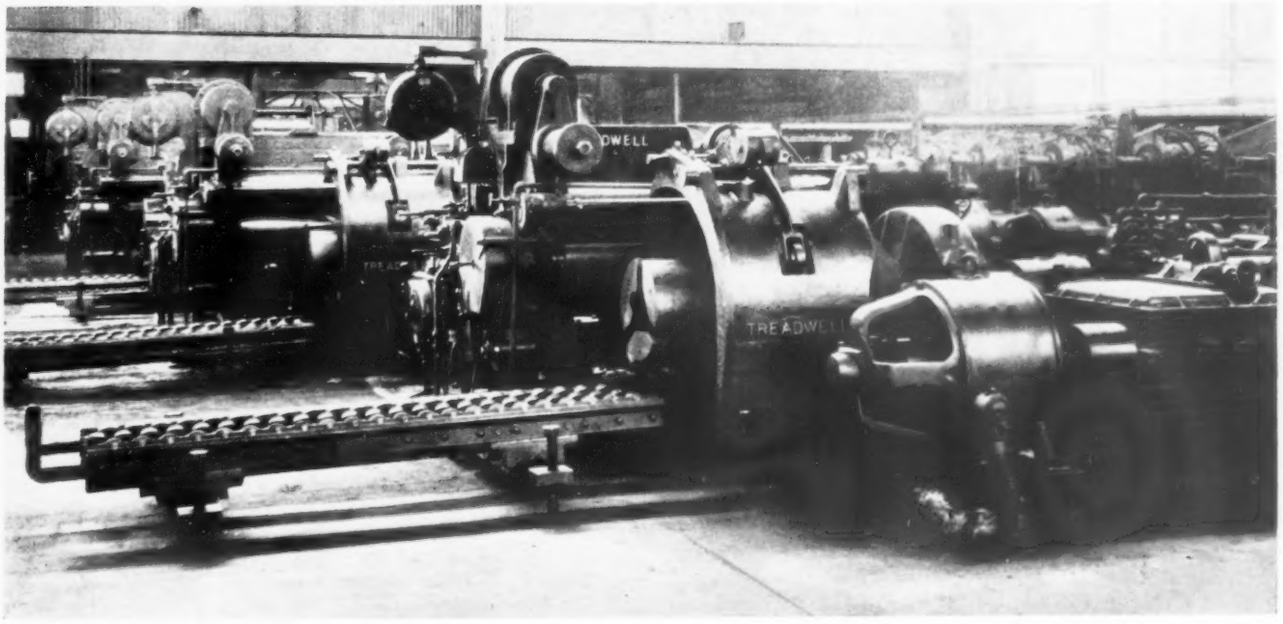
Treadwell Products Include:

Rolling Mills (Merchant, Vertical, Hot and Cold Strip) ◆ Straightening Machines
Tube Threading & Cutting Off Machines ◆ Special Machinery
Electric Steel Castings

"BETTER GRADE MACHINERY"

Treadwell Engineering Company

EASTON, PA.



Triple line continuous wide strip pickling equipment consisting of coilers, shears, pinch rolls, etc.

"Too much time is wasted, Lad, in going back and forth between welder and work to change current."

"You can spend that time profitably, Pop, in actual welding—with a 'Shield-Arc'."

"SHIELD-ARC'S" *Lincontrol* BOOSTS WELD PRODUCTION

Now you can get more welding per day. Time formerly consumed in trips to and from the welder for current adjustment can now be devoted to actual welding. Lincontrol, *"Shield-Arc's"* amazing remote control device, puts regulation of welding current right in the operator's hands, regardless of distance from the welder. Requires no extra cables, rheostat or portable accessories. Merely tapping the electrode on the work raises or lowers the welding current as desired. Users report increase in weld production as much as 50 to 100 per cent.

Lincontrol is just one of the eleven features of the *"Shield-Arc"* welder which help to speed up welding, improve quality and cut production costs. No other welder has *all* these features. That's why more Lincoln welders are in use today than any other make—and why many have found it more economical to scrap their old type machines for *"Shield-Arcs."* The savings made by the *"Shield-Arc"* generally pay for it in only a few months of operation. Find out now how much Lincoln can save you. Ask for a free study of your welding costs.

TO BE MODERN . . . A WELDER MUST HAVE THESE FEATURES

1. Uniform Current
2. High K. W. Capacity
3. Sparkless Commutation
4. High Efficiency
5. Remote Control (without portable accessories)
6. Polarity Switch
7. Center Reading Meter
8. Dual Control
9. Laminated Magnetic Circuit
10. "Handy Height" Controls
11. Drip Proof, Welded Steel Construction

"SHIELD-ARC" has them all

LINCOLN

W-76

THE LINCOLN ELECTRIC COMPANY, *Largest Manufacturers of Arc Welding Equipment in the World,* **CLEVELAND, OHIO**

"SHIELD-ARC" WELDERS AND ELECTRODES

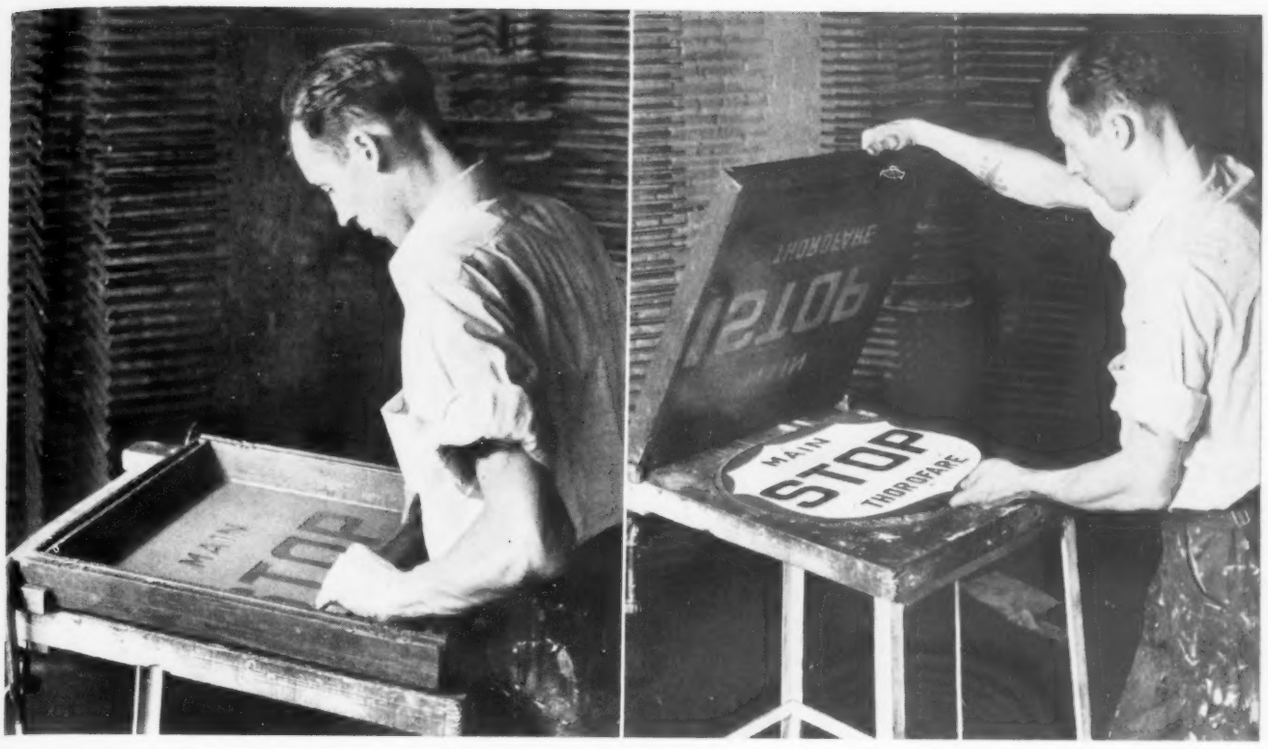


Fig. 3 (Left)—Signs are painted and lettered by forcing paint through a silk and oil paper stencil by the use of a squeegee. Fig. 4 (Right)—After painting, the signs are transferred to a rack where they are dried by air

A distinctive feature of Cleveland's display of traffic signs is the use of a device patented by William H. Balk, who has charge of the city's traffic signs and markers. This is a sign unit which is fastened to "whiteway" lamp-posts, traffic poles, electric railway and telephone poles by means of a 14-gage, soft steel bands, 1-inch wide. The two ends of the band are passed through a slotted key, and thereupon the key is given a twist, thus securely fastening the band and the sign unit.

The sign unit takes the form of a tapered slot formed out of sheet steel and given a rust-proofing surface treatment which gives it indefinite life when exposed to the weather. To the back of each traffic sign is riveted a sheet steel key or clip of corresponding shape, so that the sign may be placed in position by merely inserting the clip into the tapered slot. This clip is attached to the signs, prior to painting, by means of aluminum rivets.

But there are many places where no traffic posts or lamp-posts are available, so that some 4000 steel sign posts are required annually on permanent locations. Formerly steel angles were used but these bent out of shape too easily, and now the city buys channels for this purpose. The channels weigh 2.25 pounds per foot and are specified to rail steel analysis. They are prepared in the shop by punching 36 holes in them, each ⅜-inch and spaced to 1-inch centers, so as to provide for attaching the signs. They are also provided with points so they may easily be driven into the ground. The holes in the channels as well as those in the signs are punched on a foot-operated punch-press.

A substantial quantity of small-diameter pipe is consumed in the manufacture of portable stanchions which hold police signs and are used to mark off temporary safety zones, block off streets, etc. The shop is equipped with a pipe-threading machine for this purpose. These portable stanchions are provided with heavy cast-iron bases, weighing 150 pounds as a rule.

Mark Streets with Paint

While the city is marking streets, traffic lanes, etc., to some extent by means of aluminum-alloy plugs, only about 4000 of these plugs so far have been installed. Most of the street marking is done by means of white paint, sprayed from a gun which moves along on large-diameter wheels.

It has been the city's usual practice to mark off permanent safety zones alongside street-car tracks by means of a line of steel pipe sticking up out of the pavement. These pipe are of rolled steel, 5½ inches in diameter and with wall thickness of ½-inch. The first two, which are directly opposed to the passing traffic are known as guard posts; they are 72 inches long and are placed in steel sleeves so that three feet of the length of the guard posts is above the pavement. The other posts surrounding these permanent safety zones are 60 inches long and are set in concrete, with three feet above the pavement.

In the future, new safety zones are to be protected by heavy concrete bulkheads and the zones themselves are to take the form of concrete platforms about 6 inches above the street level. The first of these zones already has been built. Completely surrounding the base of the bulkhead and protecting it is a shield made of ⅜-inch steel plate. The concrete platform is faced on both sides by heavy steel channels tied together by steel rods welded in place. This type of construction is destined eventually to be employed in the 123 permanent safety zones in various parts of Cleveland.

The standard steel traffic pole used in the city of Cleveland is 35 feet high. These are constructed of 8, 7, 6 and 5-inch diameter steel pipe, assembling them by means of telescope joints formed by swaging and shrinking the larger over the smaller sections. The poles weigh 1500 pounds each. They are set in concrete. These are the poles that are employed for the suspension of signal lights on thoroughfares where there are no electric street railway poles. The street railway company in Cleveland uses the same poles, but shorter, so that on streets provided with railway poles, the department of public safety adds a length of pipe

(*Please turn to Page* 44)

Suggests Better Method for Specifying Valve Purchases

A valve manufacturer suggests that engineers buying valves refrain from the practice of giving the valve manufacturer a complete specification for the valves, going into detail as to design and materials to use. He points out that such specifications generally are planned to avoid setting forth in detail the description of any one manufacturer's product, and hence to be fair to all manufacturers.

"Naturally, as a result," says this manufacturer, "all bidders are obliged to quote on special material, necessarily increasing the cost and the time of delivery, while as a matter of fact in most cases many of the bidders may and probably have a standard commercial line of material which would be perfectly satisfactory for the purpose."

This manufacturer suggests that valve buyers would do better by giving the valve makers complete information regarding the conditions under which the valves are to be used, and request descriptions of their valves. The users then would be able to compare the product offered by different bidders, not only as to price, but as to design and material specifications, and thereby obtain the benefit of the broad experience of each manufacturer.

\$ \$ \$

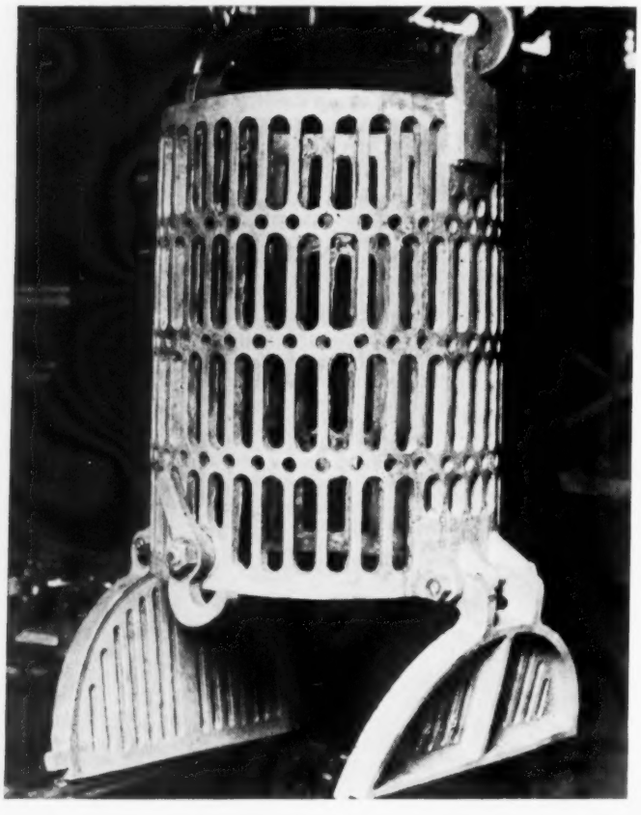
Bronze Welding Reclaims Fractured Shear Frame

Bronze welding was used to effect the repair of a fractured shear frame in a southern manufacturing plant. The section welded was hollow, 9 x 9 inches outside, with walls 1½ inches thick. Approximately 132 cubic feet each of oxygen and acetylene and 18 pounds of bronze rod were required for the job; welding time was 4 hours. The casting, valued at \$300, was saved at a cost of about \$50, including all labor and material necessary to the preparation, brazing and machining afterward.

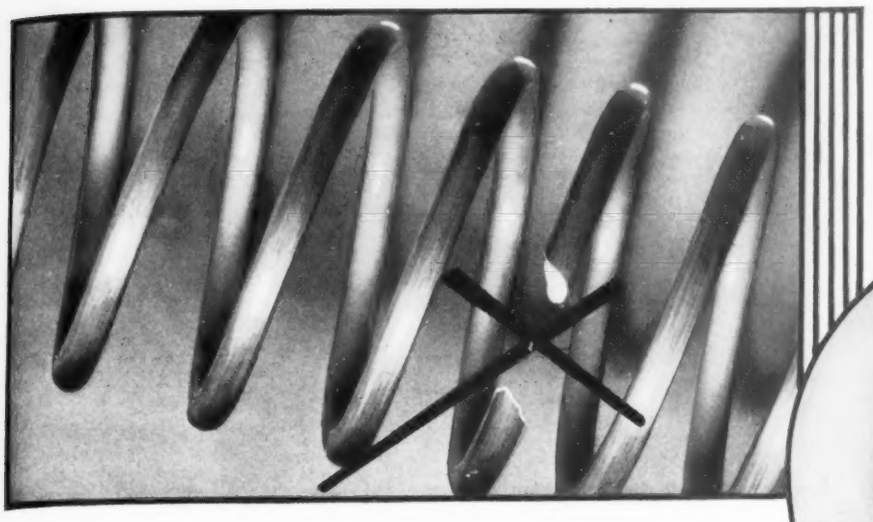
\$ \$ \$

Steel-Sheathed Box Cars Save Weight, Reduce Cost

The 500 box cars ordered recently by the Chicago Great Western railroad comprise the largest order yet placed for steel sheathed box cars built to specifications adopted as



CAST ALLOY STEEL HEAT TREATING BASKET: Designed for use in pit furnaces for heat treating small tools, chisels, bolts and the like, this bottom-discharge basket is entirely of heat-resisting alloy steel castings furnished by the National Alloy Steel Co., Pittsburgh, subsidiary of the Blaw-Knox Co. The basket is set on the floor, filled by means of a shovel and lifted by overhead hoist attached to two lugs at the top of the basket. During heating, the many openings in the sides and bottom permit thorough circulation of heat throughout the charge. When the charge is heated sufficiently, the basket is hoisted out of the furnace, moved over a quench tank or bin into which the parts are discharged by releasing the lever catches at the bottom on each side, permitting the two halves of the bottom to swing apart



Photograph of spring coil which has failed in service due to over-stress. Proper allowance for unavoidable variation in commercial wire stock would have eliminated the error.

ELIMINATING SPRING FAILURES

THE fact that springs play an important part in almost all machinery operation—and that uninterrupted performance depends entirely upon their ability to function without mishap—calls for careful and specific study of two important factors; correct design and correct application.

CORRECT design pertains not only to size and shape of the spring—as applying to the variable portion of stress—but, also, to load deflection characteristics due to any one of several reasons. Correct application means perfect coordination between spring and machinery designers—the development of an improved type of spring to eliminate trouble and failure in an existing product—or the planning of a new machine so as to assure sufficient space and other factors vital to efficient spring usage. It is the proved ability of the American Steel & Wire Company to properly design springs—and to assist in their correct application—that has made this source of supply the recognized leader.

American QUALITY Steel & Wire Company SPRINGS

1831 — MORE THAN 100 YEARS OF PROGRESS IN WIRE MAKING — 1934

AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago
94 Grove Street, Worcester

SUBSIDIARY OF UNITED STATES STEEL CORPORATION
AND ALL PRINCIPAL CITIES

Empire State Building, New York
First National Bank Building, Baltimore

Pacific Coast Distributors: Columbia Steel Company, Russ Bldg., San Francisco

Export Distributors: United States Steel Products Company, New York

standard by the American Railway association in 1932. These cars, which will be built by the Pullman Co., weigh nearly 2 tons less than the older type cars they will replace. The standardized car design represents the highest results achieved in co-ordinating weight, cost, construction, strength, distribution, utilization of materials and general utility. Exhaustive tests under operating conditions show conclusive advantages over former types.

\$ \$ \$

Chromium in Malleable Iron

Chromium up to 0.50 per cent now is being used commercially in malleable castings. Effect of chromium in preventing the annealing operation is overcome by increased silicon. A number of test bars containing 0.30 per cent chromium with 1.40 per cent silicon averaged about 80,000 pounds per square inch in tensile strength with over 9 per cent elongation.

\$ \$ \$

Saw Rings Are Hardfaced

A welding shop on the West Coast has developed a new operation of hard facing inserted saw tooth rings for circular saws in the lumber industry. These rings can be made to give about ten times the service of original unfaced rings by applying a few drops of hard facing to the front side where the sawdust strikes the ring.

\$ \$ \$

Alloy Iron for Beer Keg Die

More than 200,000 steel beer kegs have been drawn over a single nickel-chromium cast iron die by a producer of steel kegs. The average life of a gray cast iron die in this service is approximately 10,000 pieces.

\$ \$ \$

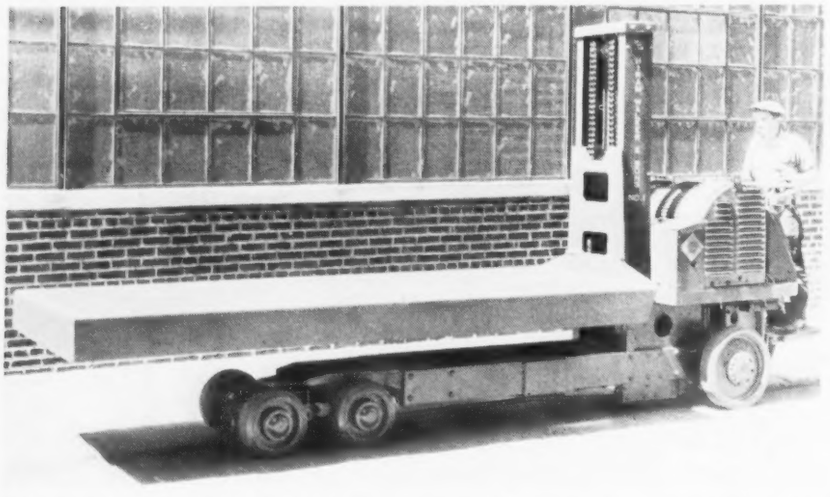
Spray Tin on Food Tanks

Many food product manufacturers now depend on the metal spraying process to protect milk filters, coolers, tanks and mixers and to prevent contamination. This is said to be the only method for obtaining whatever uniform thickness of tin is desired and the only satisfactory method for tinning large cast iron parts. In one instance, a cheese mixing tank sprayed with pure tin and polished has been in service for over two years without repairs.

Gas-Electric Lift Truck, of Cantilever Type, Has 144-Inch Platform

FOR handling whiskey in large quantities, the Elwell-Parker Electric Co., Cleveland, recently has built one of the largest industrial trucks ever constructed. It is intended to pick up racks loaded with barreled whiskey and haul them to the shipping point from the warehouse.

Of the cantilever type, its elevating platform is 144 inches long and 54 wide. It will carry 7000 pounds and tests show that when this weight is placed on the cantilever elevating platform, the deflection at the end is negligible. It is capable of carrying 12 barrels in one tier.



This gas-electric truck, with 12-foot elevating platform, will transport a 7000-pound load. It is to be used in a whiskey warehouse for moving racks of barrels

Weight is 9560 pounds, 90 per cent of which is rolled steel. Chassis, uprights and cantilever elevating platform are of steel plate, channels, angles, and flat and round bars, all cut to shape. Many of the joints are gas-welded, a number are riveted, and some are bolted in order to facilitate removal and replacement of worn parts. Some parts were formed; for instance, the heavy steel plate comprising the elevator platform was bent to form deep aprons, for strength, on three sides.

All parts subjected to wear, such as steering knuckles, are of alloy steel, heat treated. Heat treated alloy steel bars, which reinforce the upright channels, also serve as tracks for the rollers on the elevator carriage and are bolted in place so that they may be renewed when worn. A number of steel castings were used. The only nonferrous parts are two phosphor bronze worm wheels, the copper fingers and the contacts in the controllers, the electric cable, and the copper in the hoisting and drive motors.

Chains Hoist Platform

Hoisting is accomplished by two sprocket chains, attached at one end to the top and at the other end to the bottom of the cantilever conveying platform carriage. These sprocket chains pass over floating sprocket wheels at the top of the upright tower and around driving sprockets at the bottom. These driving sprockets are mounted on shafts and, through worm and spur-gear reduction sets, are actuated by the hoisting motor.

The drive of this truck is of the conventional automobile type. It is through a worm, worm wheel and differential, full floating drive shafts and universal joints, to clutch plates bolted on the outside of the two front wheels.

The two electric motors, one for hoisting and the other for driving, are of the low-voltage, low-speed, high-torque type and are designed to withstand an overload of 500 per cent. They are driven by a generator which, in turn, is operated by a gasoline engine. With such a power plant, this truck is capable of full 24-hour performance.

A feature of the power plant is that it is provided with a 3-point support to the frame which rests on springs on the front axles. This permits free travel of the axles against the springs in order to compensate for the load on the truck or unevenness of runways.

Steering is accomplished through a gear-reduction steering wheel. The truck has six wheels, including two drive wheels and four trail wheels; all participate in the steering, so that the truck may be maneuvered in

small floor space. The trail wheels, which suport the load, are so mounted as to compensate for irregularities in the floor surface; these wheels are of steel, fitted with solid rubber tires.

Safety features have been applied to various movements. The cantilever elevator platform is stopped automatically at both top and bottom by limit switches. It may be stopped manually in any intermediate position.

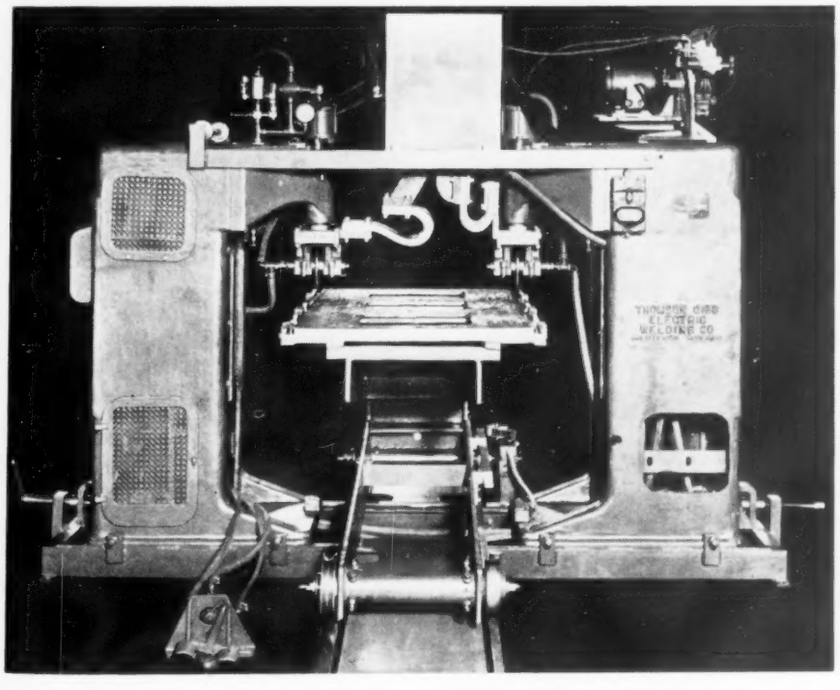
Another safety feature is incorporated in the construction of the operator's platform. This is comprised of two steel, rubber-matted pedals. Only when these pedals are held in the horizontal position by weight of the operator, can the contacts be made which will move the machine or the elevator platform. When the operator gets off the platform, the pedals automatically spring up and prevent any movement of the machine. The elevator platform is automatically locked at all times so that it cannot move up or down unless power is applied to the hoist motor.

Dual Roll Seam Welder Newest Unit In Refrigerator Assembly Line

INSTALLATION of the resistance welding machine shown in the accompanying illustration marks the complete changeover to resistance welding as the method of assembling Westinghouse refrigerators. The machine shown is a dual roll seam welder built by the Thomson-Gibb Electric Welding Co., with headquarters in Lynn, Mass.

This machine seam welds the back panels of the refrigerators to the sides and front, which are made from a single sheet of metal. Both sides are welded at the same time, as the refrigerator shell passes through the machine on a traveling table-like platen. The platen is of solid copper with renewable copper alloy inserts at the points of contact with the work and acts as a current conductor between the transformer and the welding rolls. Forward and return motion of the platen is controlled by a reversing switch and rack and pinion drive.

The machine is adjustable to suit the widths of the various refrigerator models and is equipped with a number of platens to match. The welding pressure is supplied by two air cylinders controlled by a single foot-operated valve. One transformer supplies the current for both units. The synchronous motor which appears on the top of the right hand unit in the illustration, operates the interrupter.



This dual roll seam resistance welder simultaneously welds both sides of refrigerator back panel to the remainder of the case

Two Lectures for A.S.M.E. Program at Metal Congress

Two evening lectures will feature meetings of the iron and steel division and metropolitan section of the American Society of Mechanical Engineers, in conjunction with the National Metal congress in New York, Oct. 1-5, annual convention of the American Society for Metals.

The first address will be on the subject of progress in nonferrous metals, and will be presented at 5:30 p. m. Oct. 2, by Dr. Zay Jeffries, past president of the metals society and consulting engineer for the General Electric Co., and Aluminum Co. of America in Cleveland. The second lecture, to be given at the same time on Oct. 5, will cover the subject of ferrous metals and will be presented by E. E. Thum, editor of *Metal Progress*, Cleveland, monthly publication of the American Society for Metals.

Both lectures will deal with new developments in metals from the point of view of mechanical engineers both in designing of equipment and production of metal parts. No fee will be required for attendance and the events will be open to members of all societies participating in the congress.

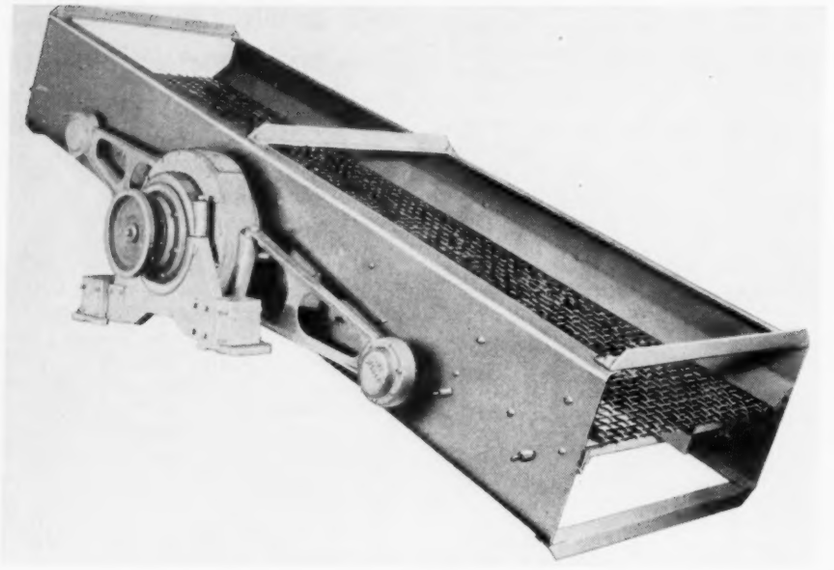
Announces Third Course On Metal Radiography

St. John X-Ray Service Inc., 30-20 Thomson avenue, Long Island City, N. Y., announces its next training course on metal radiography to be given at its laboratory during the week of Oct. 8, immediately following the National Metal congress in New York, Oct. 1-5. The first course of this kind was conducted last summer and the second during the week of July 2 following the annual meeting of the American Society for Testing Materials in Atlantic City.

The outline of the course was presented in STEEL, April 23, page 34. Sessions will be held both morning and afternoon.

Booklet Reviews Rights of Employers in Inventions

An outline of the law and practice relating to the rights of employers in the inventions of employes has been prepared in booklet form by Charles F. Murray, attorney, Monadnock block, Chicago. Mr. Murray, formerly patent attorney for the Kalman Steel Corp., has condensed his subject from extensive data accumulated through years of research and law practice, in a form easily understood by the layman. Copies may be obtained free of charge by writing the author.



—Courtesy Productive Equipment Corp., Chicago

In a normal year about 1000 tons of steel and a similar tonnage of castings are required for the construction of vibrating screens

LARGE USES OF STEEL IN SMALL WAYS

267th Article ◆ Vibrating Screens

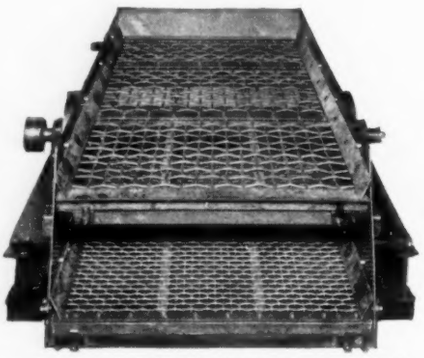
VIBRATING screens, used for rapid and efficient separation of materials, find application in many and varied industries. A survey of the list of products that lend themselves to sorting by this type of equipment shows a range from peanuts to explosives and from meat scrap to iron ore and includes rock products, chemicals, coal and numerous compounds.

With some minor changes, a typical vibrating screen is adaptable to separating any of these materials. Machines are built in various sizes and are made principally of rolled steel and castings. Estimates of steel consumption in the manufacture of this equipment indicate the annual use of more than 1000 tons of steel as well as a similar tonnage of cast parts in the industry during the most active of recent years.

Vibrating screens consist principally of the screen itself with its supporting frame which may be tilted to the desired angle; the base, and driving mechanism. Screen cloths vary in mesh according to the material to be screened and are made usually of woven steel wire or rods or perforated plates, although for the finer mesh other metals may be used, such as alloy steels, phosphor bronze or nickel silver. For screening finely ground materials equipment is available which operates concave fluffer rubbers on the screen cloth, moving about so as to come in contact with the entire surface. This action breaks up particles tending to ball or mat. Variations in the screening angle and in the vibrations are necessary for different materials.

Plates, angles and bars are the principal rolled steel parts required in the fabrication of vibrating screens. The base is cast and, in some instances, the feet are mounted with rubber to dampen vibration transmitted from operation of the machine. Screens may be of open or closed types and may have one, two or three decks, additional ones, when used, being mounted above the main deck. In the vibrator assembly steel parts include an eccentric shaft operating within an eccentric tube. Antifriction bearings generally are employed.

Vibrating screens are built in a wide range of sizes, common screening area for the smallest units being about 3 square feet while large units, having 50 square feet of area are available. Weights range from several hundred pounds to over a ton. Accompanying illustrations show two modern types.



—Courtesy Buffalo Wire Works Co. Inc., Buffalo

Special type of double-deck screen, recently developed, for handling abrasive materials. Screens are of alloy steel wire

Draw Plan for Long-Time Creep Tests

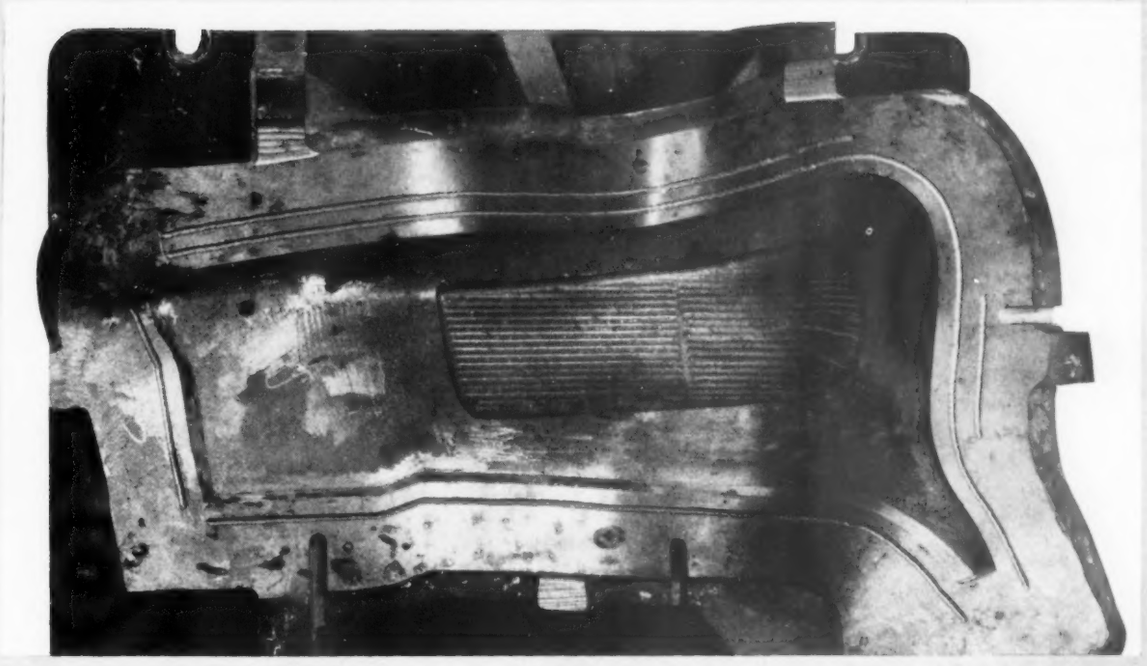
A DEFINITE plan for experimental study of methods of evaluating the load-carrying ability of metals under prolonged stress at high temperatures will be drawn up the joint research committee on effect of temperature on the properties of metals, sponsored by the American Society of Mechanical Engineers and the American Society for Testing Materials, the plan later to be submitted to letter ballot of the societies.

"Creep" of selected materials will be studied by test runs to be carried out, not merely for 1000 or 2000 hours, but for three years, or say 25,000 hours.

It also will study experimentally the progressive changes in toughness, during long exposure to high temperatures, of the 18-8 chrome-nickel stainless steel, creep properties of which have already been studied in detail by the committee. Continuation of this prior work is aimed to throw light upon the fact that this lot of material, though free from added "stabilizing" elements, was not embrittled by long sojourn under load at high temperatures in the creep tests. The question whether this austenitic steel passed through a brittle stage, without evidence in the creep curves of any change in load-carrying ability, and then recovered from its brittle state, or whether it never did become embrittled, is regarded as of both theoretical and industrial value.

A subcommittee on oil refinery problems is working out an acceptable plan for procurement of experimental and operating information on still tubes for the oil-cracking industry. A new subcommittee will study, in relation to dewaxing and other industrial problems the correlation of data on properties of metals at subzero temperatures.

"Proved better than the more costly steel dies," says Ford



This giant die of Nickel-Chromium Cast Iron stamps out the front fender of the current model Ford.

NICKEL-CHROMIUM CAST IRON

effects economies in Ford plant!

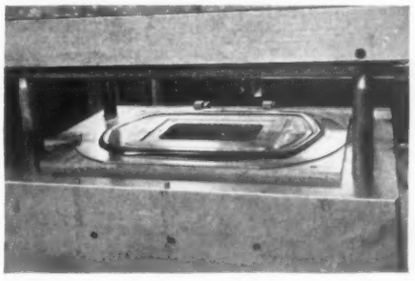
FORD chemists and metallurgists have been studying Nickel-Chromium Cast Iron with typical Ford thoroughness. Result: dies of Nickel-Chromium Cast Iron are now stamping out a wide variety of parts for the current model Ford.

Economy is one of the primary advantages of these dies. "The relatively low cost of cast iron," says the Ford laboratory report, "and its ability to fill out intricate as well as very thin sections, and the ease with which it may be machined, recommend it for many uses."

"Alloy cast irons," the report continues, "have been used for some time for sheet forming dies and have, in many instances, proved to be better than the more costly steel dies."

The most satisfactory and wear-resisting composition used at the Ford plant contained 2.00% nickel and 0.70% chromium. In some of the larger dies, excellent results were obtained by "stiffening up" the alloy composition to 3.00% nickel and 0.90% chromium.

Nickel Cast Iron is characterized by its uniform high hardness, its great strength and dense structure and high degree of wear resistance. At the same time it is readily machinable. It takes a high polish—and materially reduces galling and streaking in the formed metal.



Ford radiator shell forming die, made of heat treated Nickel-Chromium Cast Iron.

This combination of desirable features has caused Nickel-Chromium Cast Iron to be widely adopted as the preferred die material by leaders in the automotive field and by the sheet metal manufacturing industry in general.

Our casting specialists will gladly cooperate in selecting compositions of Nickel Cast Iron that are best suited to your particular die requirements.

•

THE INTERNATIONAL NICKEL COMPANY, INC.

Miners, refiners and rollers of Nickel.
Sole producers of Monel Metal
67 WALL STREET, NEW YORK, N. Y.

The LEWIS Improved SHEET STRETCHING MACHINE

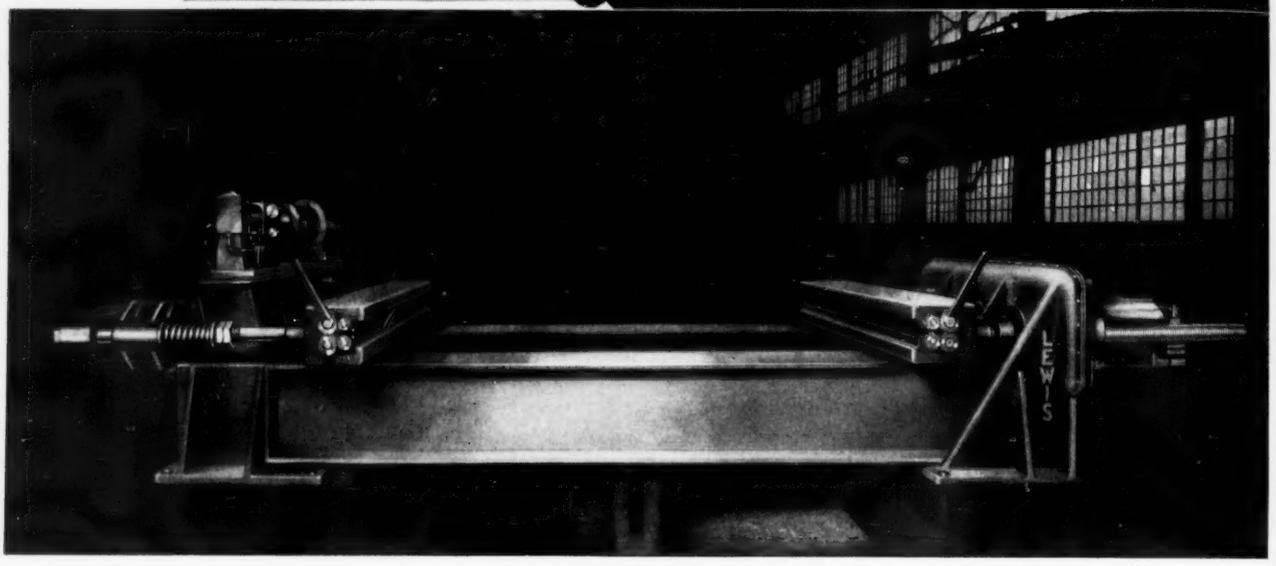
MODERN.

STRETCHING EQUIPMENT IS A SINGLE UNIT.

GEARS RUNNING IN OIL.

ENCLOSED HEAD.

PORTABLE.



LEWIS has modernized and improved the Sheet Stretching Machine—the stretching equipment is now in a single unit, mounted on top of the hydraulic operated cylinder.

The oil hydraulic pump is direct motor driven.

The complete machine can be moved to any part of the plant.

The adjustable head is totally enclosed within the gears running in oil, and is arranged so that the head can be easily adjusted for long and short sheets.

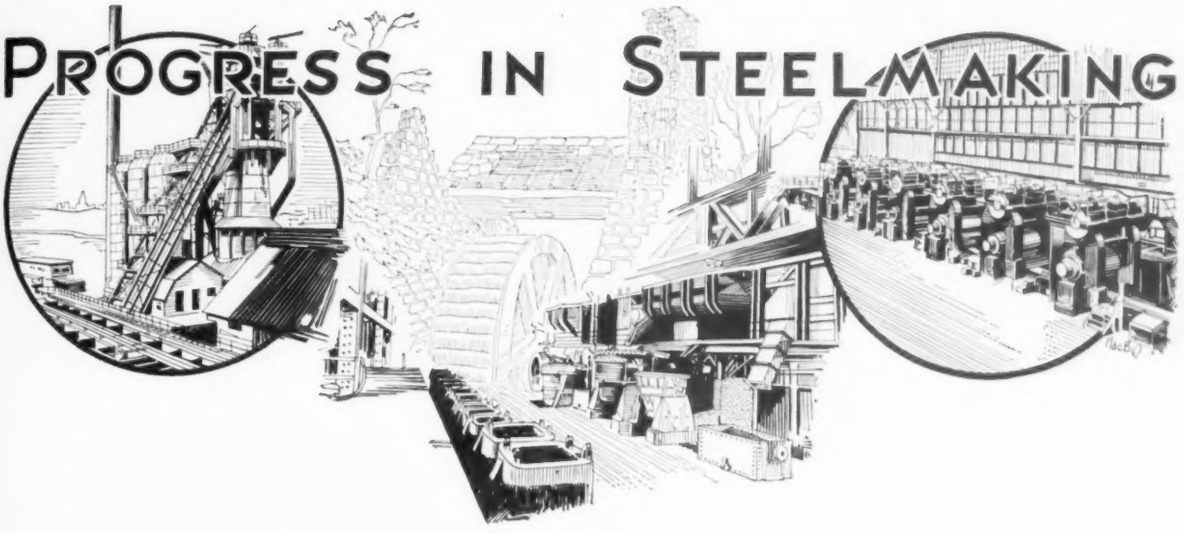
The LEWIS Sheet Stretching Machine can be made in any size, length or width—as required.

LEWIS

LEWIS FOUNDRY & MACHINE CO.

PITTSBURGH, PA.

PROGRESS IN STEELMAKING



TAPHOLE delays at an open-hearth shop in the Pittsburgh district have been overcome by the use of magnesite brick 6⅝ inches inside diameter and 24 inches long. Two of the bricks are used for the taphole, affording a run of two to three months without replacement. Use of this type brick saves considerable labor required to put in tapholes.

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To promote safety and effect savings, many iron and steel companies are bringing oxygen into the plant in trucks, putting the cylinders in multiples of ten on manifold and piping the gas to various departments, such as the scrap yard, blast furnaces, open hearths and rolling mills. At one plant all pipe joints are welded and a pressure of 125 pounds per square inch is maintained.

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Water-cooled copper molds are being used in Germany for stainless steels. Reports are that better ingot surfaces and grain size are secured.

• • •

Equipment for thawing ore and coal in open top cars is of recent development. It includes duplicate units capable of moving toward the side of the car to secure heat concentration on the car; and, away from the heated car to provide clearance for the passage of the car along the track. Sliding gates are provided at each end for complete car enclosure. Each unit comprises a structural frame movably mounted and carrying as a heating element a box, 10 x 50 feet. The box is provided with perforated front plates through which the heated air is directed against the side of the car. Heat is supplied by an oil burning furnace, products of combustion mixed with air being conducted to a blower and through suitable ducts to the heat box. It is estimated this equipment is capable of thawing a car of coal in 2 minutes so that the fuel can be dumped. About 26,000 cubic feet of air at 400 degrees Fahr. will be delivered against the car by the two units per minute.

• • •

Swedish sponge iron, according to reports, is being purchased in this country to enrich raw materials used in steelmaking. A purer steel is claimed to result from the use of pure iron.

• • •

Galvanized sheets, which will withstand severe forming operations without peel of the coating, now are being manufactured by a producer in the Mahoning valley. Instead of allowing the sheets to cool after they are ejected from the galvanizing pot, and thus permit the zinc to form spangles, they are subjected to a high temperature in a heat-treating furnace. A series of iron-zinc alloys form between the base metal and the pure zinc on the exterior. The zinc content of these alloys decreases so gradually from the surface to the steel that no sharp line of demarcation between the coating and the sheet exists, the coating thus becoming an integral part of the sheet. Under service conditions flaking up to 700 degrees Fahr, has been resisted.

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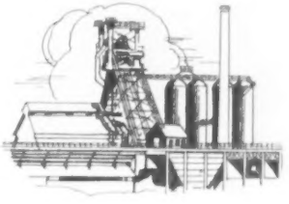
Clean ingot surfaces are secured by an eastern open-hearth operator by spraying the mold walls with soft soap.

• • •

Ground coke and tar rammed around the hearth and well of a blast furnace have proved an effective protection against wear in these zones at a stack abroad. The hearth and well brickwork thus treated was found to be unworn and undamaged following the blowout, even though the stack had been burdened on ferromanganese and spiegeleisen.



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Slowly cooling steel rails through the blue heat temperature range is effective in preventing "shatter" cracks, according to preliminary results of a study. Results are interpreted as indicating that tensile stresses normally are produced in the central part of the head of a rail as it cools, and that in the shattered rail the tensile stresses were relieved when the shatter cracks formed.

Improved Properties Extend Uses for Gray Cast Iron

BY W. WORLEY KERLIN
Gray Iron Founders' Society

POSSIBILITIES of extended uses for gray iron castings become more favorable through the revised specification of the American Society for Testing Materials designated A48-32T, and the authoritative data on the mechanical properties of gray cast iron contained in the *Symposium on Cast Iron* recently published under the joint sponsorship of the A.S.T.M. and the American Foundrymen's association.

Some of the newer applications demonstrate that the usefulness of gray cast iron need not be confined to cases where static loads prevail or mass is a requisite, but with proper application of test data in design, dynamic loads may be sustained safely.

The fundamental test upon which engineering classifications of gray iron now are based is tensile strength. The underlying reason is that designers then may choose the tensile class which they wish their material to show and the critical section in which they wish it to appear and then assign factors of safety of around 1 to 5 for static loads or 1 to 10 for live loads. Gray iron then is placed on an equivalent basis with forgings, pressed metal and structure produced by other methods of fabrication.

Because the internal structure of gray iron is dependent, to a great extent, on amount and distribution of graphite particles, mass plays an important role in the strength of gray iron from section to section. Mass effect is what a customer has in mind when he asks for a unioform grain iron. This may be interpreted in the light of the most recent specification published by the A.S.T.M. by referring to the three representative bars recommended.

Conditions for Uniform Grain

Small variations in tensile strength in the smallest bar of ¾-inch diameter and the largest bar of 2-inch diameter indicate irons that are quasi-isotropic and are liable to exhibit uniform properties from lighter to heavier sections. Most foundrymen know that uniform grain is a matter of proper melting conditions, steel content in the mix, and controlled carbon-silicon balance. Surveys show that condition may be produced in class 25 and 30 irons as well as in the higher strength irons of class 40 and 50, so it is a matter of choosing an iron which is feasible commercially for the casting in question.

A test which will give a fair idea of what strength to expect in sections under ⅜-inch thickness as yet has not come into common use, although surveys have been made on those sections. A light gray iron in a highly machinable class seldom will be weaker than 30,000 pounds per square inch in the section in which it is used. This is a point which is not widely known among designers employing cast iron.

Compression strength of cast iron is known to be superior to structural steel and most other engineering materials so its usefulness in supporting static loads long has been demonstrated. Because its compressive strength runs from 3 to 5 times its tensile strength, it is possible for a properly designed gray iron casting to have unsurpassed resistance to loads alternating between tension and compression. This is one of the basic reasons for the high fatigue resistance of gray iron and is one which the founder should not allow the engineer-customer to lose sight of.

Elastic Properties

This leads to a consideration of the elastic properties of gray iron. Castings in that metal can sustain loads up to 80 per cent of its tensile strength or its compressive strength without deformation of a permanent nature. Testing engineers speak of the ability of gray iron to resist alternating stresses as fatigue resistance and the so-called endurance limit is the yard stick by which this property is measured. The endurance limit is the percentage of the tensile breaking load which a metal will allow to be repeated a hundred million times or more without failure.

The endurance limit is proportionately greater than all other structural material because these other metals begin to deform permanently sooner and this is a preface to failure. It is therefore safe for a designer to use the usual factors of safety for gray iron on an equivalent basis with other materials and the recent applications of gray iron in automobile crankshafts, camshafts, moving parts in the refrigerator field, and the like, seem sufficient proof of success.

Damping capacity is a property highly important to users of gray iron. What is meant by damping is illustrated best by imagining the effect produced by striking a cast iron tuning fork as compared with a similar one of steel. The dull sound, of short duration, illustrates the fact that gray iron is 20 times more efficient than steel in damping vibration and has even greater advantages over the lighter weight aluminum alloys.

The engineering significance of that property of gray iron may be pointed out from two angles. First, gray iron is better than steel for machine bases and housings because it quickly wipes out vibrations and hence the source of many inaccuracies in precision tools and the like. Second, gray iron is on a competitive footing with many types of products of other methods of manufacture because its high damping capacity prevents vibrating loads from multiplying and reaching dangerous proportions. As the implications of damping capacity become better understood and publicized, profitable markets for gray iron will be opened up.

Select Test Bars

Impact or shock resistance is lower than in materials competitive to cast iron. High tensile and high transverse strength with corresponding good deflections imply superior impact properties as compared with irons of lower physical properties. Here again gray iron should be tested in bars which are representative of the working sections of the casting to give most reliable information.

Where users are interested in impact properties founders should be able to suggest tests which are most reliable. The A.S.T.M. committee on impact testing of cast iron as reported in the *Proceedings* for 1933, found that the usual Izod and Charpy tests, common for testing steel, were unreliable indices of the impact strength of cast iron. On the other hand the drop test, using a 25-pound falling hammer on a 1.2-inch diameter bar over a 6-inch span, gave reliable results.

Shear strength is one about which inquiry is made from time to time. The founder who has a thorough knowledge of tensile strength might well remember that shear strength runs from 60 per cent of the tensile strength for the lower strength irons to almost equal values for the high test irons. Tensile strength and shear strength of steel is approximately the same.

Hardness control by chills, alloys and steel in the cupola mix are familiar to most foundrymen. Many foundries have access to either brinell or Rockwell hardness machines. Where it is necessary to convert Rockwell hardness to brinell hard-

A.B.C. STRUCTURES IN CHICAGO

"City of Progress"

A—333 North Michigan Ave. Building
B—Carbide & Carbon Building
C—Pure Oil Building
D—Wrigley Building Addition
E—Tribune Tower Building

MICHIGAN Avenue in the heart of downtown Chicago, teeming with traffic, is carried over the Chicago River on a double-deck bridge of bascule type. This imposing steel structure in the midst of buildings that are modern, substantial, and architecturally pleasing, was fabricated by American Bridge Company; nor is it an isolated example. Within the field of the camera, five of the splendid towers that pierce the sky are dependent for strength and rigidity on framework of ABC-fabricated steel.

This relatively small cross section,—visual evidence of the extent of American Bridge Company activities in one great city,—finds its counterpart in many another throughout the United States.

AMERICAN BRIDGE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

General Office: Frick Building, Pittsburgh, Pennsylvania

Contracting Offices: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City.

Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco *Export Distributors:* United States Steel Products Company, New York

ness the following formula will be found to give good results.

$$\text{Brinell} = \frac{7300}{130 - (\text{Rockwell hardness})}$$

Reducing brinell hardness to rockwell hardness would be as follows:

$$\text{Rockwell} = 130 - \frac{7300}{\text{Brinell hardness}}$$

Wear resistance is a property which often is associated with hardness. The value and limitations of such tests should be weighed carefully before giving definite recommendations to users. First it should be ascertained which of the following types is most desired.

1. White or mottled iron unmachinable.

2. Heat treated gray iron—sometimes machined with difficulty.

3. Gray cast iron—all degrees of machinability.

The first classification is generally the best when considering materials which are to withstand abrasive action from softer materials, such as rolls, wheel treads and some dies. Irons under that classification also are employed to resist the very hard abrasive materials as are encountered in connection with sandblast nozzles, plow points or mixer paddles. Where strength and shock resistance must be combined the use of the various alloy combinations or the skillful regulation of chill in plain cast iron may be adopted.

Heat treated cast iron for strength, hardness and toughness is one of the newest branches of gray iron metallurgy which should not be embarked on lightly. Without a full realization of the effect of cooling strains in intricate sections, the effect of time and temperature on heating and cooling, and the need of a proper basic structure, results are likely to be disappointing. Through proper application of heat treatment, uses for gray iron are being extended.

Wearing properties of gray iron are dependent on proper balance between two structures which lie in opposition to each other. The antigalling properties of the graphite particles promote softness and open grain unless dispersed in a tough matrix of pearlite. Extent to which one should prevail over the other in resisting abrasion in a cylinder bore, a brake drum or a valve seat depend upon metallurgical testing and control linked closely with the engineering experience of the user. Mutual aid through reports from service tests, adequate hardness specifications and the like are essential for entire satisfaction.

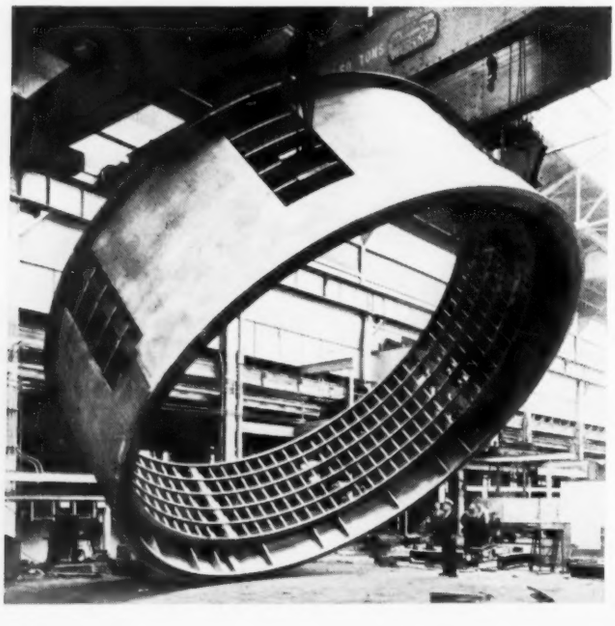
Machinability Sets Limit

The practical limit in most programs for advances in strength or toughness is in machinability. There is probably more controversy between users and producers on that point than any other. In that connection it is well to remember one of the important generalizations in the *Symposium on Cast Iron*, namely, ease of machining is usually inversely proportional to the strength of the casting. If any broad subject may be reduced to nutshell proportions this is a fair example. Founders never should fail to call users' attention to that point with the further modification that the use of nickel, molybdenum, titanium and other alloys will produce further benefits at an increased initial cost.

There is no single test yet devised to describe machinability adequately. Therefore it is of utmost importance to a foundryman to learn something of the machining feeds and speeds used on his castings and to make every effort to keep advised of any changes to avoid possible repercussions from customers that may be traced to that source. As the literature on gray cast iron becomes more voluminous from year to year, both user and producer of castings need condensations which will give them information briefly and accurately. The *Symposium on Cast Iron* fulfills that purpose well. In like manner the technical complexities involved in a certain phase of gray iron metallurgy may prevent the minds of buyer and seller from meeting with complete understanding. To enumerate certain broad principles which buyer and seller agree will tap a reliable source of supply, A.S.T.M. specifications have been formed and the foundryman will do well to promote the use and acceptance of gray iron specifications in his merchandising.

Paper Tells of Molybdenum In Iron and Steel

To familiarize users of iron and steel with the properties which molybdenum imparts to these products, the Climax Molybdenum Co., New York, has started publication of *The Moly Matrix*, a single 12 x 17-inch sheet, printed on one side, and first of a series presenting a number of items and illustrations dealing with the use of molybdenum in iron and steel. The policy of the publication will be to suggest the use of molybdenum irons and steels where their merits are found to be adequate to impart a saving, make a better product, or both. The paper will be mailed regularly to anyone requesting it.



STEEL GIANT DE-ENERGIZES DAM WATERS: Here is shown the stator frame for the first of the 82,500-kilovolt-ampere hydroelectric generators to be installed at Boulder dam power plant, recently completed in shops of General Electric Co., Schenectady, N. Y. The complete generator will be 40 feet in diameter, 32 feet high above the floor, and will weigh over 2,000,000 pounds. Dissassembled into sections at least 40 freight cars will be necessary for its transportation to the dam

How Traffic Signs Are Cut, Painted and Mounted

(*Concluded from Page* 31)

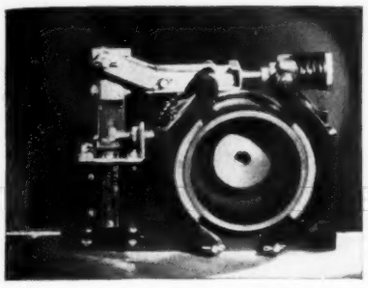
to each of the two trolley poles on diagonally opposite corners and thus secures the degree of elevation needed for proper hanging of the signal lamps.

Cleveland buys its traffic signal lights from the manufacturers. The city has installed 405 four-face, 29 one-face, 3 three-face, 3 five-face and 1 six-face signal lamps; also 21 flood lights, 3 safety islands, 25 flashing beacons and four auxiliary lights. The city also buys the controls for the lights. It buys copper-clad steel span wire and lays cable to the lights in $1\frac{1}{4}$-inch steel conduits. The conduit is strapped to the traffic poles by means of galvanized steel straps locked in place by means of slotted keys.

NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Small Electric Brakes—Cutler-Hammer Inc., Milwaukee, is introducing a new line of small alternating current and direct current solenoid-operated brakes. Three new

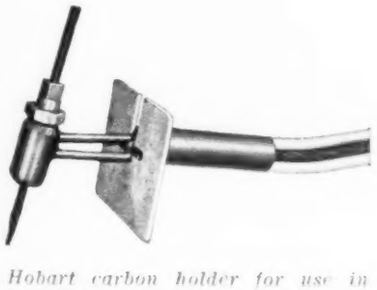


New small electric brake developed by Cutler-Hammer Inc.

brake sizes are included with torque ratings ranging from 3 to 75 pounds feet. The brake wheel of this unit is relatively large, allowing low total brake shoe pressures, which, distributed over the large brake lining area, results in low unit pressure on the lining and therefore long, even wear of the friction surfaces. The low shoe pressure also results in low stresses on all pins and pivot points, assuring longer wear for these parts, and allows the use of a small operating solenoid which requires less current. These new brakes, shown herewith, are intended for application on machine tools, conveyors, small hoists, overhead door hoisting equipment, small elevators and similar machines.

♦ ♦ ♦

Carbon Holder — Hobart Bros. Co., Troy, O., is placing on the market a new carbon holder for carbon arc electric welding. It is so designed that water circulates not only through the handle but also around the electrode itself. One of the chief advantages claimed for this holder, shown herewith, is that it is designed for use with interchangeable tips, thus making it possible to use the same holder for a wide range of carbon sizes. It is said that even when the carbon electrode is used at a white heat for several hours, the holder itself will remain so cool that it can be touched with the bare hand at any point. The device is balanced, with a comfortable grip and with a hand shield of asbestos board, 5½ inches square which can easily be removed for replacement with a larger shield, if desired. The entire holder is 14 inches long and weighs only 2¼ pounds.

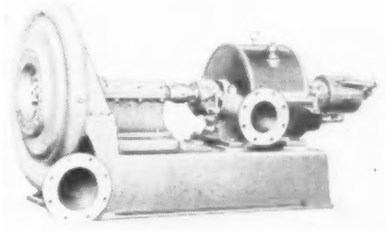


Hobart carbon holder for use in carbon arc electric welding

♦ ♦ ♦

Centrifugal Compressor—Roots-Connersville Blower Corp., Connersville, Ind., is announcing an addition to its line of centrifugal compressors and exhausters, the single-stage type 01B unit, shown herewith. In this design, the machines have their own shafts and bearings and are suitable for direct connection to standard electric motors or steam turbines, without special shaft extensions. They are also adaptable to V-belt or flat belt drive.

Impellers are furnished in aluminum or carbon steel in the standard construction, but special alloys can be supplied where conditions require.



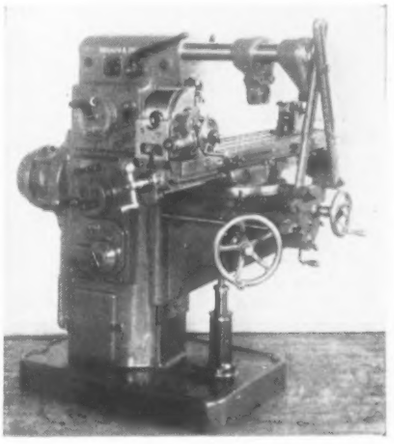
Roots-Connersville single-stage type 01B centrifugal compressor

Open-type impellers are used in the smaller sizes, with closed type for larger machines. Each impeller is designed to meet specified requirements.

♦ ♦ ♦

Universal Milling Machine—Brown & Sharpe Mfg. Co., Providence, R. I., has developed a No. 2 universal milling machine light type, shown herewith. The "set-back" column face is an important feature which gives added clearance for work, vises or fixtures, and permits placing cutters nearer to the spindle nose. When using end mills this clearance allows the mill to be kept close to the spindle end. The design is especially valuable when using attachments, particularly the universal milling and slotting attachments, inasmuch as it provides greater throat distance.

Height of the machine has been reduced, bringing the cutters and work at a more convenient level for vision of the operator. Not only is the ease and quickness of handling accomplished by moderate weight of the knee, saddle and table, but also



Brown & Sharpe milling machine with "set back" column face

by the grouping of all controls within easy reach of the operator.

To meet a wide variety of requirements 16 spindle speeds from 40 to 1300 revolutions per minute are arranged in two series—a high and a low, with 8 changes in each series obtained by the rotating speed control lever in combination with the back gear lever. One quarter turn of the rotating lever gives a change in speed, the rate of feed engaged being shown on the direct reading dial. The motor runs only when the machine is operating and is started and stopped by a lever conveniently located in the side of the column. This is a safety feature which makes it impossible for the spindle to rotate while the operator is changing cutters or arbor, in addition to minimizing wear on revolving parts.

♦ ♦ ♦

Portable Pumping Unit—De Laval Steam Turbine Co., Trenton, N. J., announces that the development of a high speed rotary displacement pump has made possible the compact and comparatively light weight transportable gasoline engine driven unit mounted on a trailer, shown in the illustration on page 48. The pump is known as the De Laval-IMO pump. Driven at approximately 1675 revolu-

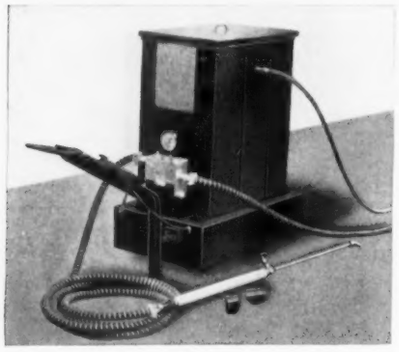
DeLaval high pressure rotary pumping unit mounted on trailer

tions per minute by a 60 horsepower gasoline engine, it delivers 90 gallons per minute against 495 pounds per square inch pressure with a suction lift equivalent to 14 inches of mercury. The pump itself weighs only 398 pounds, and the complete unit, with engine, about 2000 pounds.

The pump has only three working parts, a central power rotor and two sealing rotors, which mesh in such manner that the liquid is carried through without shock or pulsation. There are no timing gears or separate bearings, and but one stuffing box, which is subjected to suction pressure only.

♦ ♦ ♦

Vapor Spray Cleaning Unit—Homestead Valve Mfg. Co., Coraopolis, Pa., recently added a new model



Fireless "hypressure" jenny built by Homestead Valve Mfg. Co.

fireless "hypressure" jenny to its line of vapor spray cleaning units. The machine, shown herewith, is portable and compact. It differs chiefly from other models in that it uses plant steam, instead of producing its vapor by means of an oil fired generator.

The unit consists of a water or solution tank, containing an automatic float level valve. Rotary pump, directly connected to and driven by a fractional horsepower motor, operates from light socket. The amount of compound and moisture content can be varied at will by means of a manually adjustable mechanism, which enables the operator to obtain anything from a heavy cutting spray to a light cleaning mist. Full nozzle control is obtained by means of a valve on the gun. Opening or closing of the valve controls the discharge of spray from the nozzle.

Operating over a range of pressure from 50 to 250 pounds the unit is designed to meet a demand for vapor spray cleaning in a variety of industries where plant steam is available. The vapor spray method of cleaning has proved to be a time and labor saver, it is claimed, in the cleaning of machinery of all kinds, motors, skylights, exterior and interior walls, paint cleaning and stripping, or wherever cleaning is a problem.

♦ ♦ ♦

Hot Material Belt.—B. F. Goodrich Co., Akron, O., has developed a new hot material belt. The same principles of heat resistance used in its Golden Ply tires are employed in this conveyor belt. Not only is the flexing life of the new construction in its original state considerably greater than that of the regular grades of hot material belting, the company claims, but the belt cover offers greater resistance to abrasion even after prolonged exposure to heat.

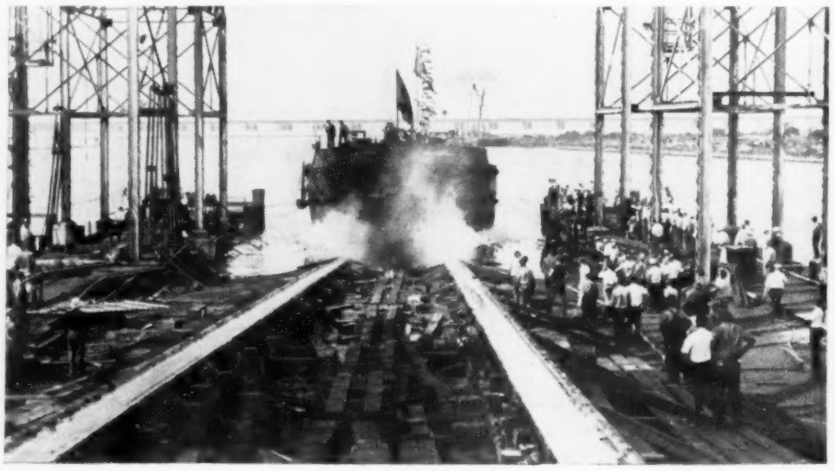
All-Welded Steel Vessel Launched—Engineer Recounts Advantages

ONE of the largest all-welded merchant vessels so far built in the United States, the motor tanker POUGHKEEPSIE-SOCONY, was launched Aug. 3 at the Staten Island, N. Y., plant of United Dry Docks Inc. This is the third new vessel launched by the Socony-Vacuum Oil Co. during the past month out of the $5,000,000 shipbuilding appropriation authorized by that company early this year. The other two were of riveted construction. Several more welded ships will be built.

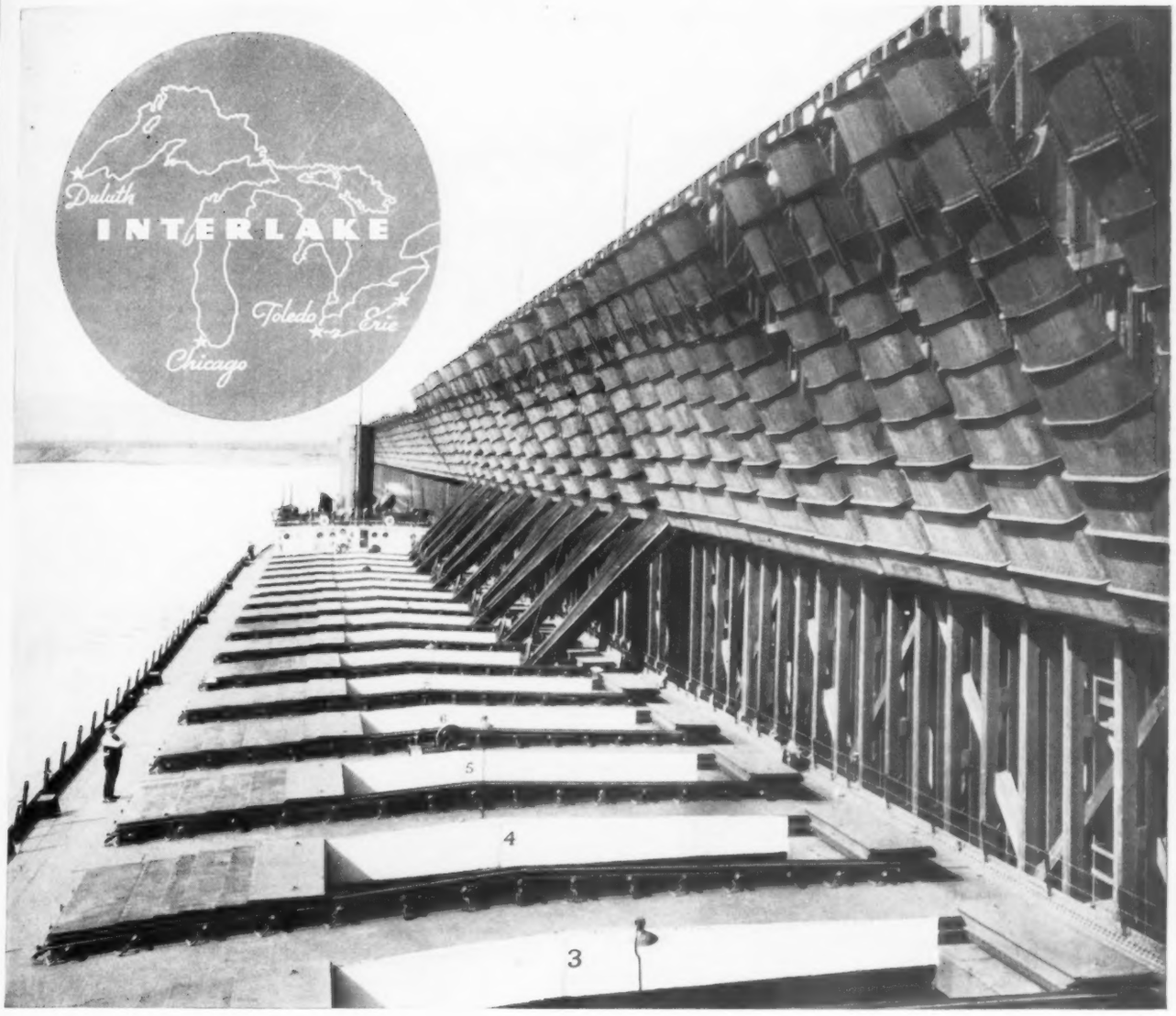
Nicholas J. Pluymert, Socony-Vacuum naval architect, in a statement in connection with the launching, declared his conviction that the introduction of the electrically-welded ship into these larger categories offers a most drastic challenge in their history to the older type riveted vessels.

"While the all-welded hull is no newcomer among service vessels of smaller size and government craft of larger size," said Mr. Pluymert, "there doubtless will be some who will regard as revolutionary the use of that method for such a vessel as the POUGHKEEPSIE-SOCONY. We feel, however, that little more than pioneering courage was required to take advantage of this great advancement in the shipbuilding art and to seize for ourselves the far-reaching economies the all-welded design makes possible.

"As ship operators," continued Mr.



All-welded construction was employed in the POUGHKEEPSIE-SOCONY, *one of Socony-Vacuum Oil Co.'s new motor tankers, launched at Staten Island, N. Y., plant of United Dry Docks Inc., Aug. 3*



THE location of Interlake Iron Corporation plants along the Great Lakes system permits effective use of water transportation. The Corporation's water shipments of ore, coal and limestone amount to millions of tons per year.

PIG IRON . . *All Grades*
FEDERAL PERRY
TOLEDO ZENITH

COKE . . . *For Foundry, Industrial and Domestic Uses*
CHICAGO SOLVAY PERRY
TOLEDO ZENITH

INTERLAKE IRON Corporation

PLANTS: CHICAGO ERIE DULUTH TOLEDO

PIG IRON **PICKANDS MATHER & CO.** COKE
SALES AGENTS
CLEVELAND • CHICAGO • DETROIT • ERIE • TOLEDO • MINNEAPOLIS • DULUTH

Pluymert, "planning to gain the utmost from cheap water transport, we could not overlook the lower first cost of construction nor the fact that at once we save 50 tons in weight, all of which becomes additional cargo space to be used as long as the vessel runs. It is possible that, from this source we might gain a full 'free trip' every year or so.

"The elimination of nearly a quarter of a million rivets and the substitution therefor of 105,000 feet of electric welding is in large part responsible for the weight-saving but lighter, stronger members also add their proportion to the result," the marine executive explained. "When the time comes that steel fabricators provide appropriately designed shapes for electric welding, I predict new economies that will be even harder to ignore."

POUGHKEEPSIE-SOCONY is a tanker of typical Socony Vacuum "canal" characteristics; she is of 1242 gross tons, 260 feet long overall, with 40 foot beam and 14 foot depth. Her cargo capacity is 712,500 gallons and, in addition, she carries 300 barrels of bunker fuel. Her power plant consists of two diesel engines of air-injection type, aggregating 750 brake horsepower and driving twin screws. For facility in maneuvering the confined spaces of the New York State barge canal, she is equipped with twin rudders.

Economic and Humanitarian Aspects of Industrial Lighting Surveyed

(*Concluded from Page* 26)

blisters and wheel marks that may be of such magnitude as to be objectionable. Highly diffused illumination as used in the above mentioned booths and tunnels is not the best for detecting these imperfections and, furthermore, complete diffusion tends to conceal rather than reveal them. This difficulty, however, can be overcome readily so that the same booth can be used for the general inspection and detection of flaws of every character by adding black bands to certain areas in the background of the booth.

(5) *Projection and magnification*

In the laboratory and elsewhere one often finds work being done on such small objects that careful inspection can only be made by magnifying them. Comparators are used to check limits and tolerances on gages, valves, gears and other parts; microscopes are used extensively by the physicist and metallographer. The index of magnification necessary depends not alone upon the initial size of the object, but also upon the amount of light available to assist vision. Many microscopes have small light sources built into them to provide sufficient light of the proper direction and spectral quality. In general the latter instruments are for laboratory use where detailed studies are made, rather than for plant inspection work.

Actual design of magnifying equipment for plant use depends upon the kind of inspection necessary. Fig. 6 shows one type, being used to inspect small wire coils, the magnified image of which is projected on a screen.

(6) *Refraction*

The principle of refraction is applied particularly to the inspection of clear transmitting substances such as plate glass and certain other glass products. This application is similar to that used for the inspection of surface flaws and aberrations in polished surfaces. The same type of light source—dark strips against low brightness backgrounds, or rectangular shaped box luminaires located at strategic points—can be used. The dark strips, or lines dividing the light and dark areas of the boxes are distorted by refraction through the glass, and thereby disclose the location of the flaw.

(7) *Internal reflection*

Some of the flaws common in transparent substances are bubbles and fire cracks which can be seen easily by the light reflected from the flaw itself. The exterior of a bubble in a glass jar, for example, becomes a convex mirror which will reflect an image of a fairly sharp and bright light source to the eye. Fire cracks are difficult to see because of their small size; the two sides of a crack, however, act as mirrors which reflect an image of the light source, especially if the source is of high brilliancy, such as a clear 200-watt lamp in a deep-bowl reflector, located close to the object.

A modification of this principle is one where objects for some reason or other must be viewed while under water. Usually it is difficult to observe objects under water because of the reflections of the light source in the water surface; hence for problems of this nature it is best to locate the light sources beneath the surface of the water.

(8) *Polarization*

Crystalline minerals frequently are studied with the aid of the microscope and polarized light, the latter often providing a better definition of structure being viewed. Strains in glass caused by poor annealing are disclosed by looking through the area under question at a source of polarized light. Strained areas appear as slight color fringes in the glass.

(9) *Ultraviolet radiation*

While the application of ultraviolet radiation for inspection work is, as yet, relatively undeveloped, its fluorescent effect upon certain chemical compounds and organic substances is well known. Dr. F. F. Lucas of the Bell Telephone Laboratories, in his work on high-power microscopy, has used the ultraviolet microscope with notable success.

(10) *Photoelectric tube and photronic cell*

With the rapid development of photoelectric tubes on a commercial basis, and the recent introduction of the photronic cell, means are available for the automatic inspection and grading of products by their light output, reflection factor or transmission factor.

The photoelectric tube operates by light which, falling on a sensitized cathode, causes an electron emission that allows a current to flow. This current is proportional to the light flux but, because the current is of low order, amplification is usually necessary if it is to be large enough for practical use.

There are limits to both their sensitivity and time for operation. W. R. King at the International Electrical Congress in Paris in 1932 stated that the alternating-current photoelectric relay operates on light changes of the order of 40 to 50 per cent and may be operated successfully with light intensities as low as 10 foot-candles; that is, with an illumination of 10 foot-candles the contactor of a relay system is open, but if the light is decreased to 5 foot-candles the contactor will close. The direct-current photoelectric relay may be operated by an illumination change of about 2 foot-candles, this value remaining practically constant between 5 and 20 foot-candles.

The photronic cell such as is now used with a recently developed illumination meter also has possibilities for inspection purposes since the cells can be used in groups to build up higher current values.

So much for lighting principles which have specific application to inspection problems. It may be well now to turn to the broader question of general industrial illumination—what good lighting is, how it is measured and how it may be obtained.

(This is the first of a series of three articles on the subject of illumination for industrial operations. The second will appear in an early issue of STEEL.)

Orders, Output Up Slightly in Dull Market

Spotty Situation, However, To Prevail Several Weeks—Navy Steel Bids Scanned—Tin Plate Need for Meat Pack Shrinks—Scrap Prices Break Sharply

IN THE first ten days of August considerably more finished steel was booked than in the corresponding period of July, the increase in some districts reaching 30 per cent.

The comparison is not particularly heartening in point of tonnage because early July was as dull as any time during the depression, but it denotes the return of numerous small, miscellaneous buyers to the market.

In the main, these consumers are rounding out requirements they cannot draw from their stocks. A fair number of orders can be traced to PWA financing. First releases of radio manufacturers for their fall programs are maturing.

It is not known that any real tonnage is being held back, but large buyers, especially in the East, are watching the opening of bids on naval construction Aug. 15 to ascertain if steelmakers have responded to the President's invitation to make concessions up to 15 per cent below the market in quoting the government. The attitude of steel producers is that deliveries on navy steel extend over a 2-year period, and to quote approximately current levels would be discounting the future.

Steel Rate Rebounds, but Not for Long; Open Hearths Not Being Pushed

But orders, like production, are likely to be spotty over the remainder of August and past the Labor day period of September. Last week, the national steelmaking rate was lifted one point to 27½ per cent as gains were recorded in the Youngstown, Buffalo, Detroit, Wheeling and Birmingham districts. The rate would have gone higher were it not for the fact open-hearth steel furnaces are not being pushed, being tapped by some operators for an average of 1½ heats per day, compared with a normal 2 to 3.

This week, with National Tube Co. plants starting a 2-week shutdown, some Carnegie Steel Co. capacity in the Mahoning valley being dropped, and Buffalo mills retrenching, the rate promises to surrender all of the gain of last week—and possibly more.

A price development forecasting what the scrap trade thinks of the market for the short pull is the break of 25 to 75 cents a ton in quotations, and reductions up to $1 a ton in some bids for railroad offerings. This follows the purchase, a week ago, of some 30,000 tons of scrap by steelmakers, the filling of these requirements leaving a vacuum.

Standard Oil in Market for Pipe; Awards of Shapes Reach 23,882 Tons

Tin plate has lost some of its buoyancy generated by the prospect of 175,000 tons being required for canning meat animals the government is buying in drought areas. It appears that some plate rolled for the corn pack, which is proving disappointing, will be diverted to the meat program, and considerably less than the original tonnage will be needed. Nevertheless, small miscellaneous releases put the tin plate production rate up 5 points last week to 65 per cent. Export tin plate has been advanced 12c a base box by the international cartel.

Standard Oil Co. of California will buy about 14,256 tons of 12-inch steel pipe for a western line. Republic Steel Corp. is delivering 4125 tons of steel pipe for a line now being laid in Michigan by subsidiaries of the American Light & Traction Co., Chicago. Youngstown Sheet & Tube Co., has booked 400 tons of steel pipe for the Midwest Refining Co., Detroit. New York city is soon to take bids on 4000 tons of cast pipe.

Seaboard Air Line has placed five locomotives, requiring 200 tons of plates, with the Baldwin interests and 100 special freight cars with Pullman. July freight car orders, totaling 19 compared with 1835 in June and 306 last July, brought the 7-month total to 23,278, against 872 in the comparable period of 1933.

Structural shape orders bulged last week to 23,882 tons when 8900 tons were closed for Hudson river piers in New York and 5000 tons for a bridge at Buzzards Bay, Mass. The largest pending work is 7000 tons for the St. Louis postoffice, plans for which have been approved. This job also will take 1500 tons of reinforcing bars.

STEEL's revised iron and steel composite was off 5 cents last week to $32.23; the finished steel composite was unchanged at $54; the scrap index dropped 21 cents to $9.96.

COMPOSITE MARKET AVERAGES

	Aug. 11	Aug. 4	One Month Ago July, 1934	Three Months Ago May, 1934	One Year Ago Aug., 1933	Five Years Ago Aug., 1929
Iron and Steel Composite (revised)	$32.23	$32.28	$32.32	$32.97	$29.92	$36.36
Finished Steel Composite	54.00	54.00	54.05	54.80	47.50	57.93
Steelworks Scrap Composite	9.96	10.17	10.30	11.30	11.57	16.46

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip and cast iron pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Aug. 11, 1934	July 1934	May 1934	Aug. 1933
Finished Material				
Steel bars, Pittsburgh	1.80	1.80	1.90	1.60
Steel bars, Chicago	1.85	1.85	1.95	1.70
Steel bars, Philadelphia	2.09	2.09	2.19	1.91
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.65
Shapes, Pittsburgh	1.80	1.80	1.85	1.60
Shapes, Philadelphia	2.00½	2.00½	2.05½	1.81½
Shapes, Chicago	1.85	1.85	1.90	1.70
Tank plates, Pittsburgh	1.80	1.80	1.85	1.60
Tank plates, Philadelphia	1.98½	1.98½	2.03½	1.79½
Tank plates, Chicago	1.85	1.85	1.90	1.70
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	2.00	1.65
Sheets, No. 24, hot ann., Pitts.	2.40	2.45	2.65	2.25
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.25	2.85
Sheets, No. 10, hot rolled, Gary	1.95	1.95	2.10	1.80
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.75	2.35
Sheets, No. 24, galvan., Gary	3.20	3.20	3.35	2.95
Plain wire, Pittsburgh	2.30	2.30	2.30	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.10
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$28.00	28.40	30.00	26.00
Sheet bars, open-hearth, Pitts.	28.00	28.40	30.00	26.00
Billets, open-hearth, Pittsburgh	27.00	27.40	29.00	26.00
Wire rods, Pittsburgh	38.00	38.00	38.00	35.00

	Aug. 11, 1934	July 1934	May 1934	Aug. 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.76	18.26
Basic, Valley	18.00	18.00	18.00	16.00
Basic, eastern, del. eastern Pa.	19.76	19.76	19.76	17.26
No. 2 foundry, del. Pittsburgh	19.26	19.26	19.26	17.76
No. 2 foundry, Chicago	18.50	18.50	18.50	17.00
Southern, No. 2, Birmingham	14.50	14.50	14.50	13.00
No. 2X, Eastern del. Philadelphia	20.63	20.63	20.63	17.88
Malleable, Valley	18.50	18.50	18.50	16.50
Malleable, Chicago	18.50	18.50	18.50	17.00
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.88	17.13
Ferromanganese, del. Pittsburgh	89.79	89.79	90.24	87.24
Scrap				
Heavy melting steel, Pittsburgh	$11.25	12.00	12.80	13.75
Heavy melt. steel, No. 2, east. Pa.	8.50	8.90	9.00	10.50
Heavy melting steel, Chicago	9.50	9.55	10.85	10.40
Rails for rolling, Chicago	10.75	10.85	12.15	11.25
Railroad steel specialties, Chicago	10.25	10.50	12.40	11.15
Coke				
Connellsville, furnace, ovens	3.60	3.60	3.45	2.75
Connellsville, foundry, ovens	4.60	4.60	4.60	3.10
Chicago, by-product foundry, del.	9.25	9.25	9.25	8.25

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.85c
Gary, base	1.95c
Chicago, del.	1.98c
New York, del	2.18c
Philadelphia, del.	2.14c
Birmingham, base	2.00c
St. Louis, del.	2.17c
F.o.b. cars, dock, Pacific ports	2.40c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.40c
Gary, base	2.50c
Chicago, del	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del	2.72c
F.o.b. cars, dock, Pacific ports	3.05c

GALVANIZED No. 24

Pittsburgh, base	3.10c
Gary, base	3.20c
Chicago, del	3.23c
Philadelphia, del.	3.39c
New York, del.	3.43c
Birmingham, base	3.25c
St. Louis, del	3.42c
San Francisco, f.o.b. cars, dock	3.70c

TIN MILL BLACK No. 28

Pittsburgh, base	2.75c
Gary, base	2.85c
St. Louis, del.	3.07c

COLD ROLLED No. 10

Pittsburgh, base	2.50c
Gary, base	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.79c
New York, del	2.83c
F.o.b. cars, dock, Pacific ports	3.10c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, base	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.24c
New York, del	3.28c

ENAMELING SHEETS

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base contract	$5.25
Do., stock	$4.90
*Long ternes, No. 24 unassorted	3.40c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 2.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.80c
New York, del	2.08c
Philadelphia, del.	1.98½c
Boston, del.	2.20c
Buffalo, del.	2.03½c
Chicago or Gary base	1.85c
Cleveland, del.	1.98½c
Birmingham, base	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific Coast, f.o.b. cars, dock	2.35c
St. Louis, del.	2.07c

Structural Shapes

Pittsburgh, base	1.80c
Philadelphia, del	2.00½c
New York, del.	2.05¼c
Boston, del.	2.18½c
Bethlehem, base	1.90c
Chicago, base	1.85c
Cleveland, del.	1.98½c
Buffalo, base	1.90c
Gulf ports	2.20c
Birmingham, base	1.95c
Pacific Coast, f.o.b. cars, dock	2.35c

Bars

SOFT STEEL

Pittsburgh, base	1.80c
Chicago or Gary	1.85c
Duluth, base	1.95c
Birmingham, base	1.95c
Cleveland, base	1.85c
Buffalo	1.90c
Detroit, del.	1.95c
Pacific Coast ports cars, dock, c.i.f.	2.35c
Philadelphia, del.	2.09c
Boston, del.	2.20c
New York, del.	2.13c
Pitts., forg. qual.	1.95c-2.05c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.70c
Chicago or Gary, base	1.75c
Moline, Ill., base	1.75c
Cleveland, base	1.75c
Buffalo, base	1.80c

IRON

Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia, base	1.89c
Pittsburgh, refined	2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young	2.10c
Gulf ports	2.45c
Pacific coast ports	2.35c
Philadelphia, del.	2.34c

Rail Steel

Pittsburgh, base	1.90c
Chicago, Buffalo, Cleveland, Birm., Young	1.95c
Gulf ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis, on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars and Shafting □ □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20
4100 .15 to .25 Mo			0.50
4600 .20 to .30 Mo. 125-1.75 Ni.			1.05
5100 .80-1.10 Cr.			0.45
5100 Cr. spring			base
6100 bars			1.20
6100 spring			0.70
Cr., Ni., Van.			1.50
Carbon van.			0.95

9250....Carbon base plus extras

Strip and Hoops □

Hot strip to 23⅛-in. Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham, base	2.00c
Detroit, delivered	2.05c
Phila., delivered	2.14c
New York, del.	2.18c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$27.00
50-60 lbs.	$24.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pittsb., Chi.	$25.00
Do., reroll. qual.	$34.00
Angle bars, mills	2.55c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts	70 off
Tire bolts	60 off
Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size.	
Rolled thread machine bolts, ½x6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10 off
Do., larger than 1-in.	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila.	6.00 off

Cut Nails □ □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20

Piling □ □

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Steel Blk.	Steel Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25 72
2	41½	26

LAP WELD

	Steel	
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

	Steel
½, butt weld	57½
⅛-inch, but weld	50½
¼—⅜, buttweld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	
⅛—1½-inch, black and galv.	take 4 pts., over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron; 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$38.00-39.00
4-in., Birmingham	41.00-42.00
4-in., Chicago	49.00-50.00
6 to 24-in., Chicago	46.00-47.00
3-in & over, east fdy	42.00
Do., 4-in.	45.00

Class A pipe $2 over Class B.

Stnd. fitgs., Birm. base	$100.00

Semifinished Steel □

BILLETS AND BLOOMS

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$27.00
Philadelphia	32.30
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O., and Sparrows Point, Md.	28.00

SLABS

Pitts., Cleve., Young.	27.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

SKELP

Pitts., Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville Fur.	$3.60- 3.85
Connellsville fdry.	4.60
*Connell. prem. fdy.	5.10- 5.35
New River fdry	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del	9.25
New England, Del.	10.50
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.

	Tank lots Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound,

†Naphthalene flakes and balls, in bbl.	6.00

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.25

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

BASING POINTS:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	.....	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Granite City, Ill.	18.50	18.50	18.00	.....
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md	19.50	.....	19.00	.....
Swedeland, Pa	19.50	20.00	19.00	20.50
Toledo, O	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
DELIVERED FROM BASING POINTS:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.02	.....	19.90	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.77	22.27	.....	.....
Brooklyn, N. Y., from Bmghm.	21.39	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.13	.....	19.01	.....
Cleveland from Birmingham	18.62	.....	18.50	.....
Indianapolis from Hamilton, O.	20.77	20.77	20.27	21.27
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.50	19.50	19.00	20.00
Muskegon, Mich., from Chicago, Toledo or Detroit	21.40	21.40	20.90	21.90
Newark, N. J., from Birmingham	20.51	.....	.....	.....
Newark, N. J., from Bethlehem	20.89	21.39	.....	.....
Philadelphia from Birmingham.	19.88	.....	19.76	.....
Philadelphia from Swedeland, Pa.	20.26	20.76	19.76	.....
Pittsburgh dist. from Neville Island	(Neville Island base, plus 63c, 76c and $1.13 switching chgs.)			
Saginaw, Mich., from Detroit	20.60	20.60	20.10	21.10
St. Louis from Granite City, Ill.	19.00	19.00	18.50	.....
St. Louis from Birmingham	18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50 †Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	18.25	Lake Superior fur.	21.00
Pitts. dist. fur.	18.25	Do., del. Chicago	24.04

SILVERY†

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos.	9.50
Spanish No. Africa basic, 50 to 60%.	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.75-18.25
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%	24.00
So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

Per 1000 f.o.b. Works

FIRE CLAY BRICK

First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.	40.00

Ohio

First quality	$40.00
Intermediary	36.00
Second quality	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	52.00

MAGNESITE

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	40.00
Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash.	22.00

BASIC BRICK

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$19.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$15.50-16.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base	85.00
Do., del. Pittsburgh	89.79
Spiegeleisen, 19-20%, dom. fur. spot†	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent. Spot, $5 a ton higher.	126-130.00
Silicomang., 2½ carb. 2% carbon 95.00; 1%	90.00 105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	55.00
Ferromolybdenum stand. 50-60%, lb.	0.96
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled	16.00
Lead, cut, to jobbers	7.50
Zinc, 100-lb. base	9.50

Tubes and Pipes

High yellow brass	17.00
Seamless copper	17.25

Rods

High yellow brass	13.00
Copper, hot rolled	13.25

Anodes

Copper untrimmed	13.75

Wire

Yellow brass (high)	15.00

Old Metals

Deal, buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.37½-4.62½
Chicago	4.00- 4.25
Cleveland	4.75- 5.00
St. Louis	4.25- 4.50
Heavy Copper and Wire	
New York	6.00- 6.25
Chicago, No. 1	5.75- 6.00
Cleveland	5.75- 6.00
St. Louis	5.50- 5.75
Composition Brass Borings	
New York	4.12½-4.37½
Light Copper	
New York	4.62½-4.87½
Chicago	4.50- 4.75
Cleveland	4.75- 5.00
St. Louis	4.50- 4.75
Light Brass	
Chicago	2.12½-2.37½
Cleveland	2.75- 3.00
Lead	
New York	2.87½-3.12½
Cleveland	2.75- 2.90
Chicago	2.75- 3.00
St. Louis	2.85- 3.00
Zinc	
New York	2.00- 2.25
Cleveland	2.00- 2.25
St. Louis	2.25- 2.50
Aluminum	
Clips, soft, Cleve.	12.00-12.50
Borings, Cleveland	6.00- 6.25
Mixed, cast, Cleve.	9.25- 9.75
Mixed cast, St. L.	9.00-10.00

Secondary Metals

Brass ingot, 85-5-5-5	8.75
Stand. No. 12 Alum.	14.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	□
Birmingham	9.00-10.00
Boston, dealers	5.25- 5.50
Buffalo, No. 1	10.00-10.50
Buffalo, No. 2	8.50- 9.00
Chicago, No. 1	9.00- 9.50
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	7.75- 8.25
Detroit, No. 2	6.75- 7.25
Eastern Pa.	10.00
Eastern Pa., No. 2	8.00- 9.00
Federal, Ill.	7.25- 7.50
Granite City, R. R.	7.25- 7.75
Granite City, No. 2	6.25- 6.75
N. Y., deal. R. R.	7.00- 8.00
N. Y., deal. No. 2	5.50- 6.50
Pittsburgh, No. 1	11.00-11.50
St. Louis	6.50- 7.00
Valleys, No. 1	10.50-11.00
COMPRESSED SHEETS	□
Buffalo, dealers	8.50- 9.00
Chicago, factory	8.00- 8.50
Cleveland	8.50- 9.00
Detroit	7.75- 8.25
E. Pa., new mat.	9.50-10.00
Pittsburgh	10.75-11.25
St. Louis	5.00- 5.50
Valleys	10.00-10.50
BUNDLED SHEETS	□ □
Buffalo	6.50- 7.00
Cincinnati, del.	6.50- 7.00
Cleveland	7.00- 7.50
Pittsburgh	9.25- 9.75
St. Louis	4.00- 4.25
SHEET CLIPPINGS LOOSE	□
Chicago	4.25- 4.75
Cincinnati	5.00- 5.50
Detroit	4.50- 5.00
St. Louis	3.75- 4.25
STEEL RAILS, SHORT	□
Birmingham	10.50-11.50
Buffalo	13.00-13.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	10.50-11.00
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft. & less	9.50-10.00
STEEL RAILS, SCRAP	□
Boston	5.25- 5.50
Chicago	9.00- 9.50
Pittsburgh	11.00-11.50
STOVE PLATE	□ □
Birmingham	7.00- 7.50
Boston, dealers	3.25- 3.75
Buffalo	8.50- 9.00
Chicago, net	6.00- 6.50
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50
N. Y., deal. fdry.	6.00
St. Louis	6.00- 6.50
COUPLERS, SPRINGS	
Buffalo	13.00-13.50
Chicago, springs	9.75-10.25
Eastern Pa.	13.00-13.50
Pittsburgh	13.25-13.75
St. Louis	8.00- 8.50

ANGLE BARS—STEEL	□
Chicago	9.75-10.25
St. Louis	7.75- 8.25
RAILROAD SPECIALTIES	
Chicago	9.75-10.25
LOW PHOSPHORUS	□ □
Buffalo, billets and bloom crops	13.00-14.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh, billet, bloom crops	14.00-14.50
Pittsburgh, sheet bar crops	13.00-13.50
FROGS, SWITCHES	□ □
Chicago	9.00- 9.50
St. Louis, cut	8.00- 8.50
SHOVELING STEEL	□ □
Chicago	9.00- 9.50
Federal, Ill.	6.75- 7.00
Granite City, Ill.	6.75- 7.00
RAILROAD WROUGHT	□
Birmingham	6.50- 7.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	7.50- 8.00
Buffalo, No. 2	10.00-10.50
Chicago, No. 1 net	7.75- 8.25
Chicago, No. 2	9.00- 9.50
Cincinnati, No. 2	7.50- 8.00
Eastern Pa.	10.00
N. Y., No. 1 deal.	7.00- 7.50
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	7.50- 7.75
SPECIFICATION PIPE	□
Boston	3.50- 4.00
Eastern Pa.	9.00
New York, dealers	3.50- 3.75
BUSHELING	□ □
Buffalo, No. 1	8.50- 9.00
Chicago, No. 1	8.25- 8.75
Cinci., No. 1 deal.	6.00- 6.50
Cincinnati, No. 2	7.00- 7.25
Cleveland, No. 2	7.00- 7.25
Detroit, No. 1 new	6.75- 7.25
Valleys, new No. 1	10.00-10.50
MACHINE TURNINGS	□
Birmingham	4.50- 5.00
Boston, dealers	1.75- 2.00
Buffalo	4.00- 4.50
Chicago	5.00- 5.50
Cincinnati, dealers	4.50- 5.00
Cleveland	5.50- 6.00
Detroit	4.50- 5.00
Eastern Pa.	5.50- 6.00
New York, dealers	2.00- 2.50
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50
Valleys	7.00- 7.50
BORINGS AND TURNINGS	□
For Blast Furnace Use	
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
Eastern Pa.	5.00- 5.50
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50
CAST IRON BORINGS	□
Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Chicago	5.25- 5.75
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
E. Pa., chemical	12.00-15.00
New York, dealers	1.50- 1.75
Pittsburgh	7.00- 7.50
St. Louis	4.00- 4.25
PIPE AND FLUES	□ □
Cincinnati, dealers	4.75- 5.25
RAILROAD GRATE BARS	□
Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.50- 5.00
Eastern Pa.	8.00- 8.50
New York, dealers	5.00- 5.50
St. Louis	4.00- 4.50
FORGE FLASHINGS	□ □
Boston, dealers	4.00- 4.25
Buffalo	8.50- 9.00
Cleveland	8.00- 8.50
Detroit	6.25- 6.75
FORGE SCRAP	□ □
Boston, dealers	4.00- 4.50
Chicago, heavy	9.75-10.25
Eastern Pa.	9.25- 9.50
ARCH BARS, TRANSOMS	□
St. Louis	10.00-10.50
AXLE TURNINGS	□ □
Boston, dealers	4.00- 4.50
Buffalo	8.50- 9.00
Chicago, elec. fur.	8.50- 9.00
Cleveland	6.00- 6.50
Eastern Pa.	10.00-10.50
St. Louis	6.00- 6.25
STEEL CAR AXLES	□ □
Birmingham	10.00-10.50
Boston, ship. point.	9.00- 9.50
Buffalo	13.00 13.50
Chicago, net	10.50-11.00
Eastern Pa.	14.00-15.00
St. Louis	10.00-10.50
SHAFTING	□ □
Boston, ship point.	10.50-10.75
Eastern Pa.	15.00-15.50
New York, dealers	10.75-11.25
St. Louis	11.00-11.50
CAR WHEELS	□ □
Birmingham, iron	8.50- 9.00
Boston, iron deal.	5.75- 6.00
Buffalo, iron	12.00-12.50
Buffalo, steel	13.00-13.50
Chicago, iron	9.75-10.25
Chicago, rolled steel	9.75-10.25
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron	11.50-12.00
Eastern Pa., steel	13.00-13.50
Pittsburgh, iron	10.00-10.50
Pittsburgh, steel	13.25-13.75
St. Louis, iron	7.50- 8.00
St. Louis, steel	8.00- 8.50
NO. 1 CAST SCRAP	□ □
Birmingham	9.00- 9.50
Boston, No. 2	6.00
Boston, tex. con.	10.50-11.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	11.00-11.50
Chicago, agri. net	7.25- 7.75
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	9.50-10.00
Cleveland, cupola	10.75-11.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	11.00-12.00
Pittsburgh, cupola	12.50-13.00
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. L., No. 1 mach.	8.50- 9.00
HEAVY CAST	□ □
Boston, del.	5.00- 5.25
Buffalo, break.	7.75- 8.25
Cleveland, break.	7.50- 8.00
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.50
N. Y., No. 1, deal.	6.25- 6.50
N. Y., break. deal.	6.50- 6.75
Pittsburgh	10.00-10.50
MALLEABLE	□ □
Boston, consum.	11.50-11.75
Buffalo	11.50-12.00
Chicago, R. R.	9.25- 9.75
Cincinnati, agri. del.	8.00- 8.50
Chicago, R. R.	9.25- 9.75
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	8.25- 8.75
Eastern Pa., R. R.	11.50-12.00
RAILS FOR ROLLING	□
5 feet and over	
Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	10.25-10.75
Eastern Pa.	12.00-13.00
New York, dealer	7.50- 8.00
St. Louis	9.00- 9.50
LOCOMOTIVE TIRES	□
Chicago (cut)	9.75-10.25
St. Louis, No. 1	9.50- 10.00
LOW PHOS. PUNCHINGS	□
Buffalo	13.75-14.25
Chicago	10.25-10.75
Eastern Pa.	14.50-15.00
Pittsburgh	13.00-13.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper			Straits Tin New York		Lead	Lead East	Zinc	Alumi-		
	Electro., del. Conn.	Lake, del. Midwest	Casting, refinery	Spot	Futures	N. Y.	St. L.	St. L.	num 98-99%	Antimony Spot, N. Y.	Ingot Nickel
Aug. 4	9.00	9.12½	8.75	51.70	51.75	3.75	3.60	4.30	*22.90	8.25	36.00
Aug. 6	9.00	9.12½	8.75	51.70	51.75	3.75	3.60	4.30	*22.90	8.25	36.00
Aug. 7	9.00	9.12½	8.75	51.65	51.70	3.75	3.60	4.30	*22.90	8.25	36.00
Aug. 8	9.00	9.12½	8.75	51.75	51.80	3.75	3.60	4.30	*22.90	8.25	36.00
Aug. 9	9.00	9.12½	8.75	52.25	52.32½	3.75	3.60	4.30	*22.90	8.37½	36.00
Aug. 10	9.00	9.12½	8.75	52.05	52.12½	3.75	3.60	4.30	*22.90	8.50	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.90c
Boston††	2.95c
Buffalo	2.95c
Chattanooga	3.31c
Chicago	2.95c
Cincinnati	3.15c
Cleveland	2.95c
Detroit	3.03½c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.30c
New York‡(d)	3.22c
Pittsburgh(h)	2.90c
Philadelphia*	2.90c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Chattanooga	3.31c
Baltimore*	3.00c
Chicago	2.75c
Cincinnati	3.15c
New York‡(d)	3.32c
Philadelphia*	2.90c
St. Louis	3.19c
Tulsa	3.25c

REINFORC. BARS	
Buffalo	1.95c
Chattanooga	3.31c
Chicago	2.10c-2.60c
Cleveland (c)	1.97½c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.24c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES	
Baltimore*	3.90c
Boston††	3.17c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland	3.31c
Detroit	3.40c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.90c
Boston††	3.18c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland, ¼-in. and over	3.31c
Detroit	3.40c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.55c
New York(d)	3.40c
Philadelphia*	2.95c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*	3.05c
Boston††	3.25c
Buffalo	3.10c
Chattanooga	3.36c
Chicago	3.00c
Cincinnati	3.20c
Cleveland	3.11c
Det., 8-10 ga.	3.13½c
Houston	3.35c
Los Angeles	3.80c
New Orleans	3.55c
New York	3.27c
Portland	3.75c
Philadelphia*	3.05c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†	3.51c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.21c
Chicago	3.85c
Cincinnati	4.05c
Cleveland	3.96c
Detroit	3.93½c
Los Angeles	4.45c
New York	3.85c
Philadelphia*†	3.55c
Pittsburgh**	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.14c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore *†	4.21c
Buffalo	4.00c
Boston (g)	4.55c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.70c
Cleveland	4.61c
Detroit	4.70c
Houston	4.40c
Los Angeles	5.05c
New Orleans	4.95c
New York	4.50c
Philadelphia*†	4.25c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c

BANDS	
Baltimore*	3.15c
Boston††	3.25c
Buffalo	3.30c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.45c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.38½c
Houston	3.25c
Los Angeles	3.90c
New Orleans	3.95c
New York(d)	3.62c
Philadelphia	3.15c
Pittsburgh(h)	3.70c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.25c
Buffalo	3.55c
Chicago	3.30c
Cincinnati	3.45c
Det., No. 14 and lighter	3.38½c
New York	3.62c
Philadelphia	3.40c
Pittsburgh(h)	3.70c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore(c)	3.71c
Boston	4.00c-4.50c
Buffalo (h)	3.55c
Chattanooga*	4.06c
Chicago (h)	3.50c
Cincinnati	3.70c
Cleveland(h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	4.95c
New Orleans	4.30c
New York	3.92c-4.42c
Philadelphia	3.73c
Pittsburgh(h)	3.45c
Portland (f)	4.75c
San Fran.(f)(d)	5.95c
Seattle(f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	5.25c
Chicago	3.27c
Cincinnati(b)	3.42c
Cleveland (b)	3.20c
Detroit	3.33c
New York	4.70c
St. Louis	3.56c

(b) Plus straightening, cutting and quantoty differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 9

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon	$15.24	3 0 0	88.04	1 13 0
Basic bessemer	13.72	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.37	3 0 6	.....	.....
SEMIFINISHED STEEL				
Billets	$27.94	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	39.62	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.37	7 15 0	$26.77	5 10 0
Merchant bars	1.70c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.67c	7 7 6	.68c	3 1 6
Plates, †¼ in. or 5 mm.	1.82c	8 0 0	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.10c	9 5 0	1.13c to 1.16c	5 2 6 to 5 5 0
Sheets, gal., 24 gage, corr.	2.55c	11 5 0	1.43c	6 10 0
Bands and strips	1.87c	8 5 0	.88c	4 0 0
Plain wire, base	2.10c	9 5 0	1.18c	5 7 6
Galvanized wire, base	2.38c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.72c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 4.57	0 18 0	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4($3.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.15	3 7 6(a)	$13.99	210	$14.73	310	$24.82	63
Basic bessemer pig iron	16.51	3 5 0(a)*	12.32	185	13.78	290	27.38 (b)	69.50
Furnace coke	4.45	0 17 6	7.99	120	5.23	110	7.49	19
Billets	27.94	5 10 0	28.64	430	20.90	440	38.02	96.50
Standard rails	1.87c	8 5 0	2.10c	700	2.42c	1,100	2.36c	132
Merchant bars	1.95c	8 12 0	1.68c	560	1.21c	550	1.97c	110
Structural shapes	1.99c	8 15 0	1.65c	550	1.21c	550	1.92c	107.50
Plates, †¼-in. or 5 mm.	1.92c	8 8 9	2.10c	700	1.54c	700	2.27c	127
Sheets, black	2.38c	10 10 0§	2.55c	850‡	1.71c	775‡	2.58c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.95c	13 0 0	4.50c	1,500	3.30c	1,500	6.62c	370
Plain wire	2.10c	9 5 0	3.39c	1,130	2.42c	1,100	3.10c	173
Bands and strips	2.12c	9 7 0	1.95c	650	1.54c	700	2.27c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

Bars

Bar Prices, Page 52

Pittsburgh—Revised extras, effective Aug. 1, on wrought iron bar mill products, were announced last week by A. M. Byers Co., Pittsburgh. The list covers not only bar sizes but also small shapes usually incorporated on the bar card. In merchant steel bars, contracted demand continues. The automotive industry is buying small lots. Widely scattered steel bar orders, however, take an unchanged 1.80c base price, Pittsburgh.

Cleveland—Demand for steel bars is light in this market, but there is some inquiry for alloy steel bars against expected needs for new model automobiles.

Boston—Industrial users of commercial steel bars have not come into the market for new stock, due largely to slower manufacturing schedules. Buying is spotty and light.

Philadelphia—Specifications for commercial steel bars remain light, about on a parity with those of the past two or three weeks. Producers, however, find some comfort in the knowledge that consumers' stocks are gradually being reduced. Commercial steel bars are 1.80c, Pittsburgh, or 2.09c, Philadelphia, and common iron bars 1.89c to 1.94c, Philadelphia.

Chicago—Changes in bar sales and specifications are small but usually for the better. Occasional slight gains are noted in inquiries. Declining demand in the automotive industry gives increased importance to miscellaneous consumers. While drought conditions hurt the outlook for farm implement manufacturers, higher prices of farm products and federal benefit payments help purchasing power.

Plates

Plate Prices, Page 52

Pittsburgh—Small plate jobs of 25 to 50 tons dominate the market for tanks and many of these are under PWA sponsorship. Larger tanks, however, are infrequent although Pittsburgh-Des Moines Steel Co., Pittsburgh, last week received contract for a 500,000-gallon elevated water tank at Two Rivers, Wis., taking 170 tons of plates. Dravo Contracting Co., Pittsburgh, last week received formal notice of award on the lighthouse tender JASMINE, taking 150 tons of plates. Promised inquiry for a single barge to be bought privately in this district made an appearance late last week. Dravo Contracting Co. is reconditioning a steel tank barge at Neville Island, Pa., for the General Chemical Co., Newell, Pa.

Chicago—Orders for fabricated plates are light, but several projects requiring fair tonnages are pending. Some tank work is being figured for the Michigan oil district, while Mississippi river dams, which will come up for bids soon, will take substantial lots.

Boston—Plate inquiry has improved slightly. The Worcester, Mass., car building shop is taking steady shipments but the closing of several railroad repair shops has reduced demand for general railroad work. Plates are 2.20c, delivered.

New York—Plate demand is slightly improved, with some tank and equipment orders being placed here for a 5000-ton refinery for Dutch Shell interests in Venezuela. Gifford-Wood Co., Hudson, N. Y., is low on 300 tons for tanks for the First National Oil Co., Long Island City, N. Y. Some fabricators are reported as refusing to quote on navy ships up for bids this week because of the government's attitude on overhead costs.

Philadelphia—Platemakers have submitted prices on material for the navy ships on which construction bids will be opened Aug. 15. It is possible although too early to know for sure that there will be no change in going prices and that such concessions as may be permitted under the President's ruling of last June will lie in the fact that sellers did not actually increase their prices as would otherwise be the natural tendency in view of the long period the contracts will have to run, probably around two years. Approximately 200 tons of plates will be required for five locomotives for the Seaboard Air Line, placed with Baldwin Locomotive Works. Miscellaneous tank work is light, with production in eastern plants at the lowest point since the first week in July. Prices are 1.90c, Coatesville, Pa., or 1.98½c, Philadelphia.

Toronto, Ont.—Contract for construction of a large ferryboat to ply between Halifax and Dartmouth, N. S., has been awarded the Davie shipyards of the Canada Steamship Lines.

Contracts Placed

450 tons, Green river pipe line, Tacoma, Wash., to American Concrete Pipe Co., Tacoma, Wash.

270 tons, dredger hull, Yuba Construction Co., Yuba City, Calif., to Moore Drydock Co., Oakland, Calif.

170 tons, 500,000-gallon elevated water tank, CWA project, Two Rivers, Wis., to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh.

150 tons, lighthouse tender, JASMINE, to Dravo Contracting Co., Neville Island, Pittsburgh.

Unstated tonnage, 150,000-gallon elevated tank, prison colony, Norfolk, Mass., to Pittsburgh-Des Moines Steel Co., Pittsburgh, at $15,150.

Contracts Pending

300 tons, tanks for First National Oil Co., Long Island City, N. Y.; Gifford-Wood Co., Hudson, N. Y., low.

125 tons, 24-inch welded pipe line, La Mesa, Calif., for Lemon Grove and Spring Valley irrigation district; Southern Pipe & Casing Co., Los Angeles, low bidder.

Sheets

Sheet Prices, Page 52

Philadelphia—Producers of galvanized sheets and galvanized formed roofing are proceeding slowly in signing up new agreements with jobbers because of the heavy responsibility said to be imposed upon them by the steel code, under Regulations No. 5, which went into effect July 19. Under these regulations a producer who signs with a jobber who had not up to that time made a new agreement must assure himself that the reseller, to obtain the $2 concession permitted, meets all the requirements of the steel code definition of one entitld to such concession.

Having obtained these assurances and having entered a new agreement he must be prepared, in the event of error in his appraisal of the status of the jobber, to stand full penalty of $10 a ton not only on material he sold to this jobber but also on material sold to this jobber by any other producer. The producer who first signs up with a jobber establishes the latter's standing with all other producers who may sell to him during the life of the agreement, according to the interpretation placed upon the regulations by most producers.

Where the status of the jobber is not fully known to the producer—and often times it is difficult for the producer to establish to his own satisfaction that the jobber is entitled to the discount, due to the fact that the customer may be located some miles away or for some other reason—the tendency among some producers, at least, is to quote the reseller in question the full market price but insert a clause stating that if he has already entered a new agreement with another producer he will be entitled to the discount provided.

With shipments under the original jobber agreement due to expire Aug. 31, producers are being confronted more and more with the necessity of

getting their jobber customers lined up under the new agreement. General buying is quiet.

Pittsburgh—Some indication of the present restricted sheet market is derived from the poor rate of operations in the producing industry which underwent a slight setback last week to a scant 20 per cent. Most automobile body shops are taking only a few fill-in orders and many in the Detroit district continue to accept shipments on sheet seconds. Small tank builders are not overly active and the movement in galvanized and black sheets still is hard hit by an apparently vanished rural buying power in some communities. Galvanized sheets at 3.10c base Pittsburgh, and black sheets at 2.40c are unchanged, as are cold-rolled sheets at 2.50c base Pittsburgh, on No. 10 gage and 2.95c on No. 20 gage.

Chicago—The sheet market continues in the doldrums, with both orders and shipments changed but slightly from the low rates prevailing since early July. While automotive needs are declining, sheet consumption generally is heavier than incoming releases. Heavy stocks accumulated by users last quarter, however, mitigate in many cases the need for anything but fill-in purchases. Producers are hopeful of a definite recovery in demand by September.

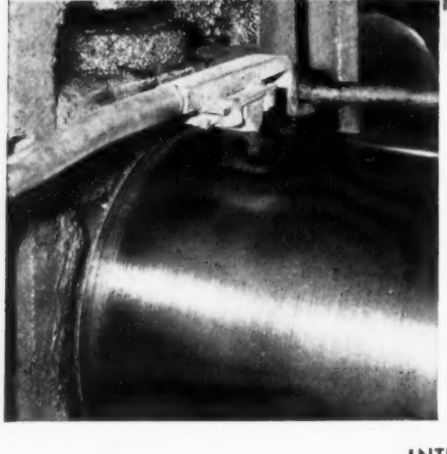
Boston—Sheet demand has improved more slowly than expected and buying is light with prospects for only a moderate gain for this month over last. A good part of the volume now being done is in spot lots.

New York—Sheets are moving slowly, the last two weeks or so showing a dip from the best week in July. Consumers' stocks, however, are gradually being reduced, as fabrication is holding up better than new releases. Prices are unchanged.

Buffalo—Demand for sheets, which taxed the capacity of local works in May and June, has collapsed. District producers are operating at less than 25 per cent and have no orders on hand to indicate any major gain in production in the near future.

Cincinnati—Lull in sheet demand from mills in this district was accentuated during the past week, and rolling schedules tend downward from the recent level of about 30 per cent. Tonnage moved to automobile manufacturers is smaller. The market for small orders is broad. Buying by jobbers continues surprisingly good.

ROLL SCOURING BRICKS



The Usual Standard Shapes *plus*

The NORTON ROUND CORNER BRICK

INTRODUCED a little over a year ago, the Norton Round Corner Roll Scouring Brick has already become decidedly popular. Rounding the corners results in four very definite advantages: 1. Reduction in cross breakage. 2. Reduction of spalling or chipping. 3. Longer life because of less chipping and breakage. 4. Reduction of scratching due to absence of sharp corners.

In all Norton Roll Scouring Bricks exact control of the spacing of the abrasive grains is made possible by Norton Company's "Controlled Structure" method of manufacture. By wider spacing between the abrasive particles faster scouring action is possible without resorting to the use of coarser grit sizes. The pores or chip clearance is greater, thus allowing a deeper cut to be taken. Because of the clearance and free cutting action a stronger bond can be used, resulting in longer life. Likewise, comparatively fine grain is used, giving good finish and "shine."

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Philadelphia Pittsburgh Hartford
Cleveland Hamilton, Ont.
London Paris
Wesseling, Germany

W-491

NORTON

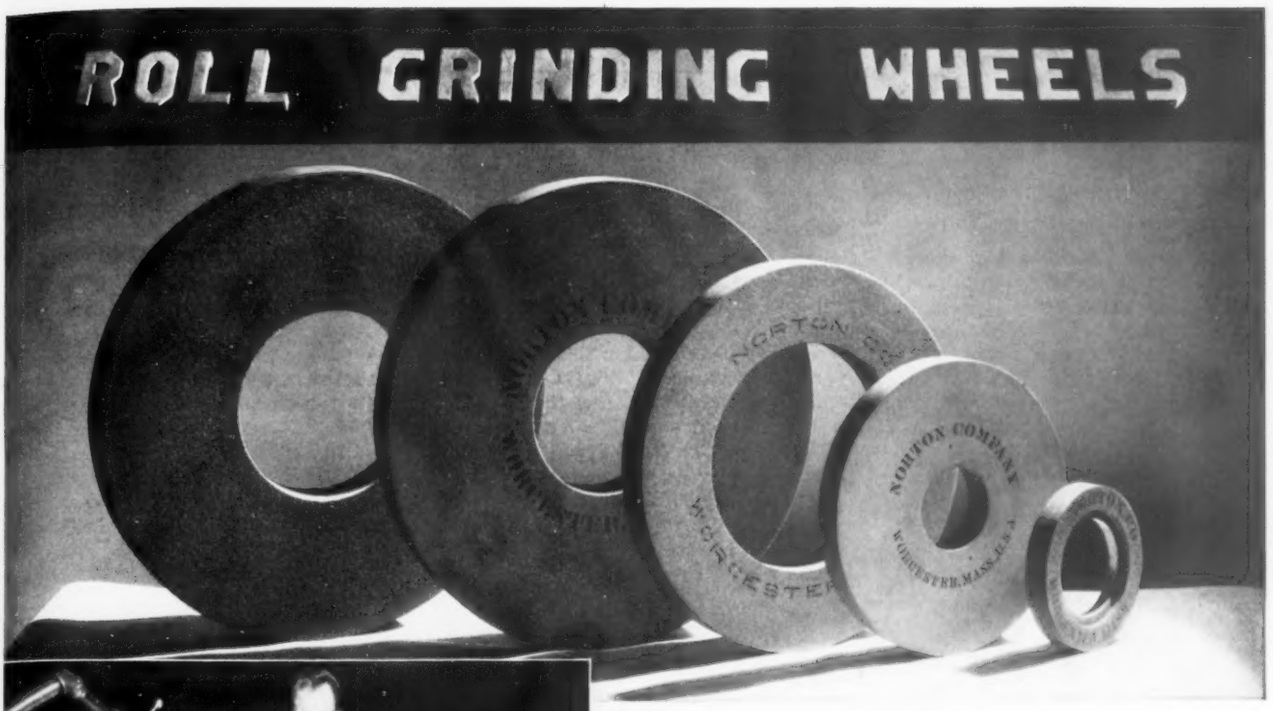
Tin Plate

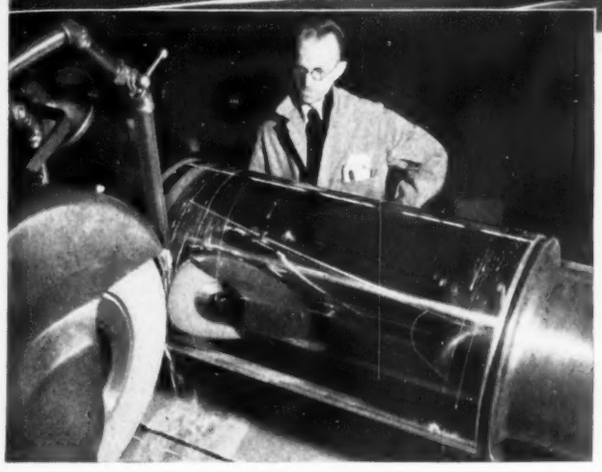
Tin Plate Prices, Page 52

Pittsburgh—From developments of the past week, part of the encouragement derived from canning 7,000,000 head of cattle for the government has been dissipated. It was estimated at that time that 175,000 tons of tin plate would be required, but it now develops that owing to an unfavorable corn crop many canners who had made up tin plate into containers for this pack will simply divert their stocks to the meat pack. Therefore, somewhat less than the estimated 175,000 tons of tin plate will be required eventually. Despite this disappointment, tin plate producing capacity last week was engaged at a full 65 per cent of capacity, an advance of 5 points from the week previous.

New York—Export price on tin plate has been advanced 12 cents per box since Aug. 1. This is said to be the result of final organization of the international cartel of tin plate producers.

ROLL GRINDING WHEELS





Hot Mill Rolls . . . .

Cold Mill Rolls . . . .

Tinning Rolls . . . . .

THE wheel requirements for each are different. Even on similar jobs the requirements differ in different mills . . . for some stress speed of cutting action, some stress wheel life, some stress quality of finish. But whatever the requirements there is a Norton wheel to do the job—and do it mighty well.

There are wheels of Crystolon abrasive for chilled iron rolls and Alundum abrasive for hardened steel. There are vitrified, shellac and Bakelite bonds. Grain sizes vary from coarse for roughing to as fine as 500 for rolls requiring extremely high lustre. And with Norton wheels the structure, too, is under definite control—is positively varied to meet individual requirements.

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New York Chicago Detroit
Philadelphia Pittsburgh Hartford
Cleveland Hamilton, Ont.
London Paris
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ABRASIVES
BEHR-MANNING
NORTON PIKE

Shapes

Structural Shape Prices, Page 52

Pittsburgh—Lacking either sizable award or inquiry, the structural shape market continues to be made up of small jobs. Bids have been rejected on 1100 tons for a brewery at Detroit. Pittsburgh federal engineers have asked for bids Aug. 31 on 272 tons of structural steel, rods, castings and bolts and 105,900 square feet of piling for the Savannah Bluff lock, Savannah river, Georgia.

Chicago—New structural jobs are few, with Mississippi river dams representing the largest prospective work. Plans are being prepared for the first five of these units and Sept. 18 has been set for bids to government engineers, St. Paul office, on the Trempealeau, Wis., dam. Plans are being drawn for the Ashland avenue bascule bridge here over the Chicago river. A PWA loan for this work, estimated to take about 2000 tons, has been provided.

Boston—Structural awards are heavier, led by a 750-ton bridge over the Penobscot river, Howland-Enfield, Me.

New York—Inquiry is somewhat heavier, with a sharp gain in awards noted the past week. Prices bid for fabricated and erected material in a number of instances are low. Nearly 9000 tons was placed late last week for Hudson river pier sheds.

Philadelphia—Bridge work dominates structural demand. Bids were opened Aug. 10 on the 5000-ton state viaduct in Baltimore and some scattered tonnages are active in Pennsylvania, with 200 tons of state work opened Aug. 10 and 220 tons to be opened Aug. 17. Shapes are 1.90c, Bethlehem, Pa., 2.00½c, Philadelphia.

Cleveland—Structural shape needs continue light but signs point to imminent releases of structural work now pending. Railroads are ordering considerable light material for bridge repairing.

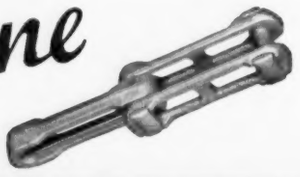
Washington—Frazier-Davis Construction Co. and G. L. Tarlton, St. Louis, have been awarded contract by the government for constructing a steel sheet piling cutoff wall for the Fort Peck dam, Montana, at $2,157,840. Included in this job will be 1,042,100 square feet of sheet piling and a nominal bar tonnage.

St. Louis—Structural fabricators are looking forward to issuance of calls for bids on the St. Louis postoffice. Modified plans, accepted by the government, are said to call for approximately 7000 tons of structurals and 1500 tons of reinforcing.

Toronto, Ont.—The city administration has let a contract to the Richardson Construction Co. for the Mount Pleasant avenue bridge here. The company's bid was $107,382.

Birmingham, Ala.—Fabricating shops are receiving numerous contracts with an occasional order for some tonnage. Virginia Bridge &

Use Genuine



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Shape Awards Compared

	Tons
Week ended Aug. 11	23,882
Week ended Aug. 4	16,134
Week ended July 28	19,620
This week in 1933	7,668
Weekly average for 1933	14,838
Weekly average, 1934	17,520
Weekly average, July	18,609
Total to date, 1933	489,659
Total to date, 1934	578,169

Iron Co. is now supplying steel for the bridge over the Tombigbee river in this state, on the new extension of the Meridian & Bigbee railroad, 1200 tons being required.

Shape Contracts Placed

5900 tons, pier sheds 90 and 92, Hudson river, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through George F. Driscoll Co.

5000 tons, including operating machinery, railroad lift bridge, Cape Cod canal, Buzzards Bay, Mass., to Phoenix Bridge Co., Phoenixville, Pa.

3000 tons, pier shed 88, Hudson river, New York, to McClintic-Marshall Corp., Bethlehem Pa., through William Kennedy Construction Co.

1200 tons, bridge over Tombigbee river, Alabama, extension of Meridian & Bigbee railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

1060 tons, seven land plane hangars for United States government, San Diego, Calif., to McClintic-Marshall Corp., Bethlehem, Pa.

925 tons, shapes and sheet piling, Umpqua bridge project, Oregon; 775 tons shapes to Pool & McGonigle, Portland; 150 tons sheet piling to Pacific Coast Steel Corp., Seattle; Teufel & Carlson, Seattle, general contractors.

850 tons, wharf and transit shed, Stockton, Calif., to Ingalls Iron Works, Birmingham, Ala.

825 tons, overhead crossing, Melrose Park, Ill.; to McClintic-Marshall Corp., Bethlehem, Pa.

750 tons, bridge superstructure, Penobscot river, Howland-Enfield, Me., to Lackawanna Steel Construction Corp., Buffalo; Edmond Cyr & Co., Waterville, Me., low on substructure.

650 tons, postoffice, Binghamton, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; Coath & Goss, Chicago, general contractors.

510 tons, chemical buildings, University of Southern California, Los Angeles, to Consolidated Steel Co., Los Angeles.

350 tons, Siuslaw bridge project, Oregon, to unnamed interests; Mercer-Frazier Co., Eureka, Calif., general contractor.

340 tons, building, at Ladycliff college, Highland Falls, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.

222 tons, including 116 tons of plain material and 106 tons of fabricated structural steel, Pennsylvania state highway letting, Washington-Allegheny counties, to Reliance Steel Products Co., Rankin, Pa., on direct bids to the state of July 27.

220 tons, Winner road viaduct, Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City, Mo.

200 tons, Miriam Osborn home, Rye, N. Y., to Ingalls Iron Works, Verona, Pa.

200 tons, plant, United States Gypsum Co., Greenville, Miss., to Worden Allen Co., Milwaukee.

180 tons, dredger hull, Yuba Construction Co., Yuba City, Calif., to Moore Dry Dock Co., Oakland, Calif.

175 tons, plant addition, Grit Publishing Co., Williamsport, Pa., to Belmont Iron Works, Philadelphia.

160 tons, state hospital, Westboro, Mass., to Bethlehem Fabricators Inc., Bethlehem, Pa.

160 tons, bridge, Tohefuncta river, Louisiana, to Jones & Laughlin Steel Corp., Pittsburgh.

160 tons, field house, St. Marks school, Southboro, Mass., to Lehigh Structural Steel Co., Allentown, Pa.

150 tons, bridge, Sheboygan, Wis., to McClintic-Marshall Corp., Bethlehem, Pa.

130 tons, bag and receiving building, Anaconda Copper Mining Co., Perth Amboy, N. J., to Belmont Iron Works, Philadelphia.

125 tons, lighthouse, Green Bay, Wis., to Lakeside Bridge & Steel Co., Milwaukee.

120 tons, state highway bridge, Portage county, Ohio, to Fort Pitt Bridge Works, Pittsburgh.

110 tons, Lincoln Savings bank, Brooklyn, N. Y., to Richie & Penner, Brooklyn.

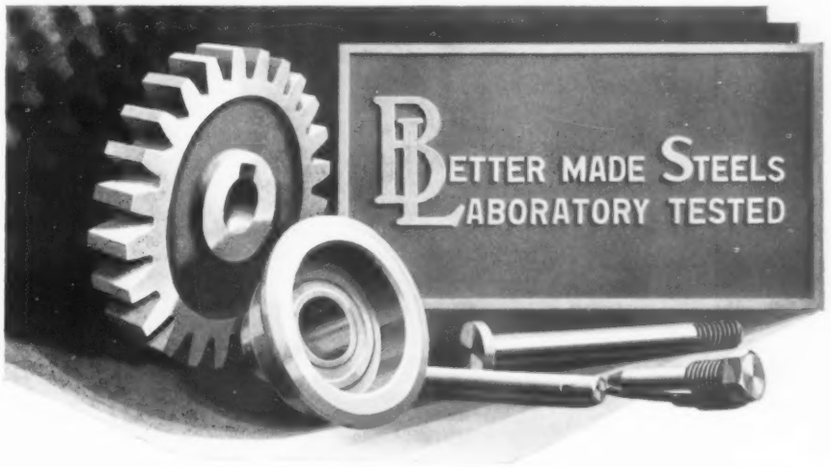
100 tons, Pennsylvania state highway work, Philadelphia-Montgomery counties, to Fort Pitt Bridge Works, Pittsburgh.

100 tons, underpass, north approach, Cape Cod bridge, Bourne, Mass., to American Bridge Co., Pittsburgh; Frank Westcott, North Attleboro, Mass., general contractor.

Shape Contracts Pending

7000 tons, St. Louis postoffice, modified plans accepted by government; bids soon.

2500 tons, addition to building 163, bu-



Alloy Steels for Specialized Uses

COLD FINISHED BARS
•
TURNED SHAFTING
•
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Today, B & L Alloy Steels are performing many valuable tasks for industry—eliminating failures in machine parts by insuring uniform depth of case and greater resistance to impact—making tougher gears that last longer but are easier on cutting tools—providing extreme hardness for wearing surfaces—developing heat-resisting and anti-corrosive properties.

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BLISS & LAUGHLIN, INC.

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reau of yards and docks, Norfolk, Va.; bids Aug. 22.

1500 tons, piling, filtration plant, Hammond, Ind.; Mackie-Thompson-Tamm Inc., Chicago, general contractor.

1100 tons, wash house and stock cellar for Stroh Brewing Co., Detroit; bids rejected.

850 tons, railroad bridges, various locations, for Louisville & Nashville railroad, Louisville, Ky.

750 tons, miscellaneous structural steel craneway and rails, Boulder dam power plant, Boulder City, Nev.

420 tons, Pennsylvania state bridge work, including 200 tons on which bids were opened Aug. 10, and 220 to be opened Aug. 17; opening Aug. 10 included 180 tons for bridge in Schuylkill county, route 161, section 5.

275 tons, East End brewery, Utica, N. Y.

272 tons, mainly structural steel but including small lots of reinforcing rods, iron and steel castings and bolts, Savannah Bluff lock and dam, Savannah river, Georgia; bids to Pittsburgh federal engineers, Pittsburgh; Aug. 31; also included 105,900 square feet of steel sheet piling.

270 tons, state highway bridge, Buena, Wash.

200 tons, dormitory, Miami university, Oxford, O.

200 tons, building, Taunton-New Bedford division, Revere Copper & Brass Inc., New Bedford, Mass.

185 tons, bridge, Soucook river, Loudon, N. H.

177 tons, Vermont state highway bridge, Royalton, Vt.

175 tons, manufacturing building, Bridesburg, Pa., for Charles Lennig & Co.

150 tons, utility building, Yosemite national park, Yosemite, Calif.; bids Aug. 28.

Unstated tonnage, Ashland avenue bridge, Chicago; PWA loan made, plans being drawn.

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Each Pompton billet is ground all over before finish rolling . . . one of the many extra precautions that contribute to higher Ludlum standards.

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Strip Steel

Strip Prices, Page 53

Pittsburgh—The base of 2.60c, Pittsburgh or Cleveland, on cold-rolled strip steel holds steady. The market on hot-rolled strip is quiet and unchanged at 1.80c base, Pittsburgh.

Chicago—Strip producers await a further reduction in consumers' stocks before expecting much improvement in new business. Orders recently continued light, both individually and collectively, but at least held their own.

Boston—Cold-rolled strip continues sluggish with only slight improvement in spot business. Hot strip is also moving slowly. Few rerollers are operating better than 35 per cent. Cold-strip is steady at 2.80c, Worcester, Mass.

New York—The local strip market is as dull as at any time this year, with specifications light and prices unchanged. As consumption is exceeding new buying, stocks at manufacturing plants are lower.

Philadelphia—Strip trading is negligible, with prices unchanged at 1.85c, Pittsburgh, or 2.14c, Philadelphia, for hot-rolled and 2.60c, Pittsburgh, or 2.89c, Philadelphia, for cold-rolled.

Semifinished

Semifinished Prices, Page 53

The 60 to 65 per cent rate of operations in the tin plate rolling industry that was instituted within the past ten days has made for an unexpected call for tin bars, but otherwise semifinished steel producers find little life in the character of wire rod, billet or skelp demand. Many forging shops are either closing at this time for lack of business or to take annual inventories, and the movement of forging quality billets has been thereby restricted. At Pittsburgh, the base price on sheet bars remains at $28 and on billets at $27. Skelp is quoted at $34 and tube rounds at $38, base Pittsburgh.

Reinforcing

Reinforcing Bar Prices, Page 53

Pittsburgh — Although Freeland, McHale & Patten Inc., Pittsburgh, have awarded 117 tons of plain steel bars for Pennsylvania state work in Blairsville borough, Pennsylvania, R. D. Thomas & Co., Pittsburgh, general contractor on work in Bedford county requiring 472 tons, had not sublet their steel requirements up until late last week. Both projects were in the same Pennsylvania state letting, July 27. The market remains quoted 2.05c, Pittsburgh, for cut lengths, or 1.85c, Pittsburgh, to jobbers.

Chicago—Little new business in concrete bars is appearing for Illinois road work, but some tonnage is pending in Indiana. Federal and municipal PWA projects furnish the bulk of prospective orders, with private building still at the slow pace that has marked the year to date.

Boston—Inquiry for reinforcing steel has improved, largely for bridges, with an underpass, north approach to the Cape Cod bridge, Bourne, Mass., taking 250 tons.

New York—A fair volume of reinforcing steel is pending on which contractor-buyers are slow to close. Bulk of bar needs are for public work. Billet steel reinforcing bars are 2.48c, delivered.

Philadelphia—Reinforcing bar inquiry is more active, with approximately 500 tons involved in various state jobs. Bids on a portion of this work were opened Aug. 10, with bids on the remainder to be opened Aug. 14 and Aug. 17.

Reinforcing Steel Awards

650 tons, Umpqua bridge project, Oregon, to Mercer Steel Co. and Soule Steel Co., Portland; Teufel & Carlson, Seattle, general contractors.

525 tons, Siuslaw bridge project, Oregon, to unnamed interests; Mercer-Frazier Co., Eureka, Calif., general contractor.

450 tons, Green river pipe line, Tacoma, Wash., to American Concrete Pipe Co., Tacoma, Wash.

171 tons, San Gabriel river bridge, Los Angeles county, California, for state, to unnamed interest.

160 tons, state work, Gloucester, N. J., to Taylor-Davis Inc., Philadelphia.

150 tons, mesh and bars, armory, Newark, N. J., to American Steel & Wire Co., Pittsburgh, and Joseph T. Ryerson & Sons Inc., Chicago.

125 tons, bridge, New York Central railroad, Weehawken, N. J., to Joseph T. Ryerson & Sons Inc., Chicago, through George A. Fuller Co.

117 tons, reinforced concrete pavement and bridge, Blairsville borough, Indiana-Westmoreland counties, Pennsylvania, to Truscon Steel Co., Youngstown, O., through Freeland, McHale & Patten Inc., Pittsburgh, contractors.

110 tons, high school, Lake Forest, Ill., to Truscon Steel Co., Youngstown, O.

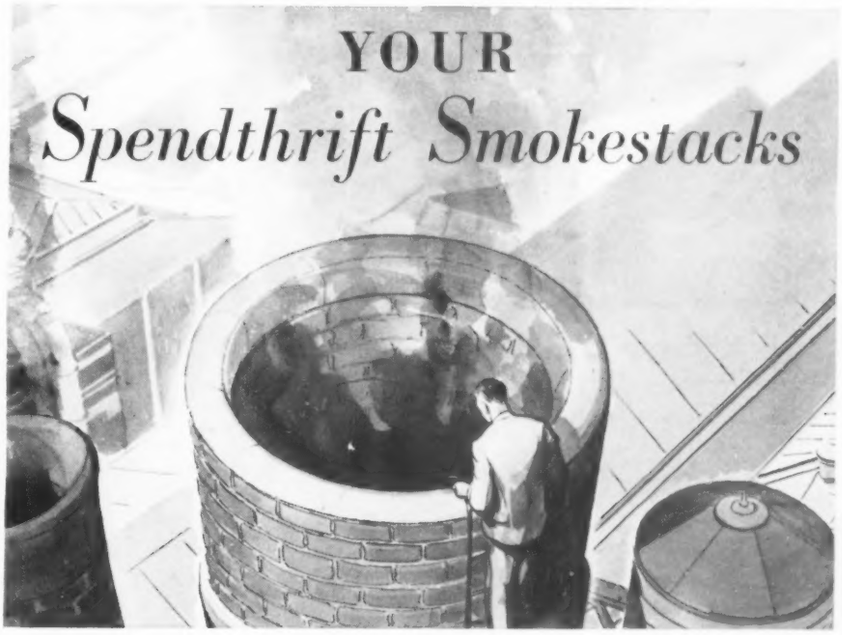
100 tons, Verdugo Wash conduit, Los Angeles county, California, for county, to unnamed interest.

100 tons, building for Armstrong Paint & Varnish Co., Chicago, to Joseph T. Ryerson & Sons Inc., Chicago.

100 tons, mesh, Bayside high school,

Concrete Awards Compared

	Tons
Week ended Aug. 11	2,758
Week ended Aug. 4	1,639
Week ended July 28	6,758
This week in 1933	390
Weekly average for 1933	3,232
Weekly average, 1934	4,437
Weekly average, July	3,251
Total to date, 1933	106,661
Total to date, 1934	146,433



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Through the use of Sturtevant Fuel Saving Equipment heat which ordinarily would go up the stack can be captured and used for raising the temperature of your feed water or for preheating your combustion air. The result is a material reduction in coal consumption.

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FEED WATER AND AIR PREHEATERS

Queens, New York, to American Steel & Wire Co., Pittsburgh, through Royal-Rice Co. Inc.

Reinforcing Steel Pending

1500 tons, St. Louis postoffice, modified plans accepted by government; bids soon.

750 tons, wharf and transit shed, Stockton, Calif.; general contract to R. E. McKee, Los Angeles.

600 tons, mostly mesh, New York state highway work; bids Aug. 10, 17 and 24.

500 tons, miscellaneous state highway work, Pennsylvania; bids Aug. 10, Aug. 14 and Aug. 17.

350 tons, concrete deck for Delaware river bridge, Philadelphia; bids in.

250 tons, state bridge, Connersville, Ind.

240 tons, underpass, north approach, Cape Cod bridge, Bourne, Mass.; Frank Westcott, North Attleboro, Mass., low.

175 tons, grade school, Reading, Pa.; bids Aug. 14.

175 tons, surgical operating and ward building, City hospital, Boston; bids Aug. 22.

150 tons, Maiden Creek dam, Reading, Pa.; bids about Aug. 22.

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Railroads

Track Material Prices, Page 53

Purchase of 100 allsteel phosphate cars of 70-ton capacity by the Seaboard Air Line, from the Pullman Car & Mfg. Corp., for its shops at Birmingham, Ala., and five locomotives by the same railroad from the Baldwin Locomotive Works, Eddystone, Philadelphia, is the feature of the railroad market.

A contemplated inquiry for 450 subway cars for the board of transportation, New York, may not become active until late fall, due to possible revisions in design.

Replacement and repair requirements are increasing in the East but at Chicago repair shops are reaching the end of their commitments. Some small rail tonnages are expected to come out this fall. Rail mills at Pittsburgh have practically completed their rollings and at Chicago it is believed schedules will be completed by Aug. 31.

Domestic freight car business in July, involving 19 cars, was the lightest so far this year, and brings the total for the first seven months to 23,278. Comparisons are given below:

	1934	1933	1932	1931
Jan.	152	3	159	100
Feb.	19,725	0	35	50
March	30	5	105	2,166
April	800	50	0	2,798
May	717	8	60	20
June	1,835	500	0	1,910
July	19	306	25	617
7 mo.	23,278	872	384	7,662
Aug.	.....	202	5	1,304
Sept.	.....	23	1,298	703
Oct.	.....	514	0	980
Nov.	.....	533	2	35
Dec.	.....	316	50	11
Total	.....	2,460	1,739	10,694

Car Orders Placed

Seaboard Air Line, 100 phosphate cars, 70-ton capacity, to Pullman Car & Mfg. Corp., Birmingham, Ala.

Locomotives Placed

Seaboard Air Line, five locomotives, to Baldwin Locomotive Works, Eddystone, Pa.

Pipe

Pipe Prices, Page 53

Pittsburgh—American Light & Traction Co., through its subsidiaries, Muskegon Gas Co. and American Michigan Pipe Line Co., recently started work on a 55-mile, 8⅝-inch, pipe line into Muskegon, Mich., and

Muskegon Heights, Mich., from the Mecosta county, Michigan, field. It is reported that over 4000 tons of pipe was awarded for this project late in June before the advance in line pipe price became effective and at that time the line was characterized as "an unidentified project." A valley mill is completing the order. Last week Youngstown Sheet & Tube Co., Youngstown, O., is reported to have closed on a small 4-inch line of 15 miles in length at Alma, Mich., for the Midwest Refining Co. Other line pipe projects, however, are infrequent and delayed as soon as financing details are discussed.

Chicago—Standard Oil Co. of California has announced plans for a new pipe line in that state, 108 miles long and calling for over 14,000 tons to connect a marine terminal with the San Joaquin oil fields. Cast iron pipe is fairly active from the standpoint of number of pending jobs, but closing of orders is slow. A large tonnage of pipe is involved in numerous small projects for various municipalities in this and nearby states, and there are some indications that PWA work will be speeded over coming months.

Boston—Inquiry for cast pipe continues light with Brockton, Mass., buying a small tonnage from an eastern Pennsylvania foundry. Boston is again in the market for close to 1500 tons of steel pipe for a water line. Recent purchases by Boston have included close to 2800 tons.

Philadelphia—Approximately 5000 tons of rerolled steel, including tubes, angles and cross bars, will be required for 227,000 cots for several points on which the United States quartermaster's department here recently opened bids. Bunding Glider Co., Philadelphia, will supply most of these cots, according to present indications. No action has yet been reported on the 900 tons of 30-inch pipe, to be purchased through Gannett, Eastman & Fleming Inc., Harrisburg, general contractor, for the Panther Valley Water Co. project near Lansford, Pa.

New York—Small-lot volume is noticeably heavier, with prices holding well. Inquiry for 4000 tons of cast pipe is expected shortly from the city, the largest inquiry from this source to be received in several years.

Merchant pipe market continues quiet and highly unsettled, particularly with regard to the resale situation. Changes in code regulations may be announced soon.

Birmingham, Ala.—Disappointment is reflected in statements emanating from leaders in cast iron pipe manufacture. Several thousand tons are in prospect but releasing of contracts is slow.

Cast Pipe Placed

1000 tons, 4 to 48-inch, Columbus, O., to James B. Clow & Sons Co., Chicago.

700 tons, Georgetown, Mass., water supply project, to Warren Foundry & Pipe Co.; to be fabricated at the company's Everett, Mass., plant.

594 tons, 16-inch, class 150, Gilroy, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

300 tons, Kings Park state hospital, New York, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

150 tons, 18-inch, Brockton, Mass., to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

1125 tons or 55 miles, 8-inch welded, gas line for American-Michigan Pipe Line Co. and Muskegon Gas Co., subsidiaries of American Light & Traction Co., Chicago, to Republic Steel Corp., Youngstown, O.; line to be built by

When at A Century-of-Progress in Chicago see the ERIE hammer and press operating at the Chrysler Motors exhibit.

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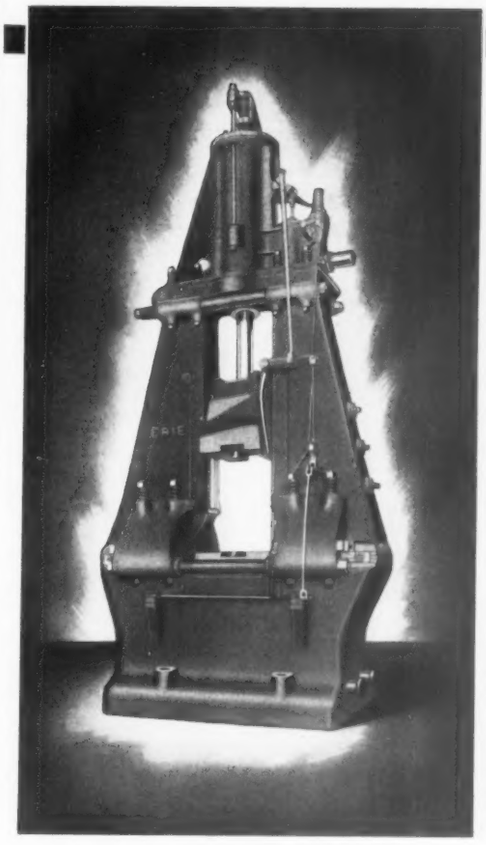

Throughout the years, increasing the production from a machine has been a vital problem. Today, more than ever, the problem still confronts manufacturers in spite of the prevalent talk about overproduction.

The limitations placed on working conditions make it necessary to get more output per machine within the code limitations. Can your present forging equipment give you this additional output?

Probably not, because most hammers in use are obsolete though still operative. Write for information concerning the improved type of ERIE steam drop hammer; ERIE board drop hammer; ERIE trimming presses.

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ERIE

United Light & Power Engineering & Construction Co., Davenport, Iowa.

400 tons, approximately, 15 miles of 4-inch pipe for Midwest Refining Co., Detroit; installation in Alma, Mich., to Youngstown Sheet & Tube Co., Youngstown, O.

Cast Pipe Pending

870 tons, 4, 6, 8 and 14-inch, 53,500 lineal feet, Chehalis, Wash.; bids Aug. 15.

428 tons, 4 to 10-inch, class 150, Fallon, Nev.; bids opened.

360 tons, 30-inch, Terminal Island outfall sewer, Los Angeles; bids Aug. 22.

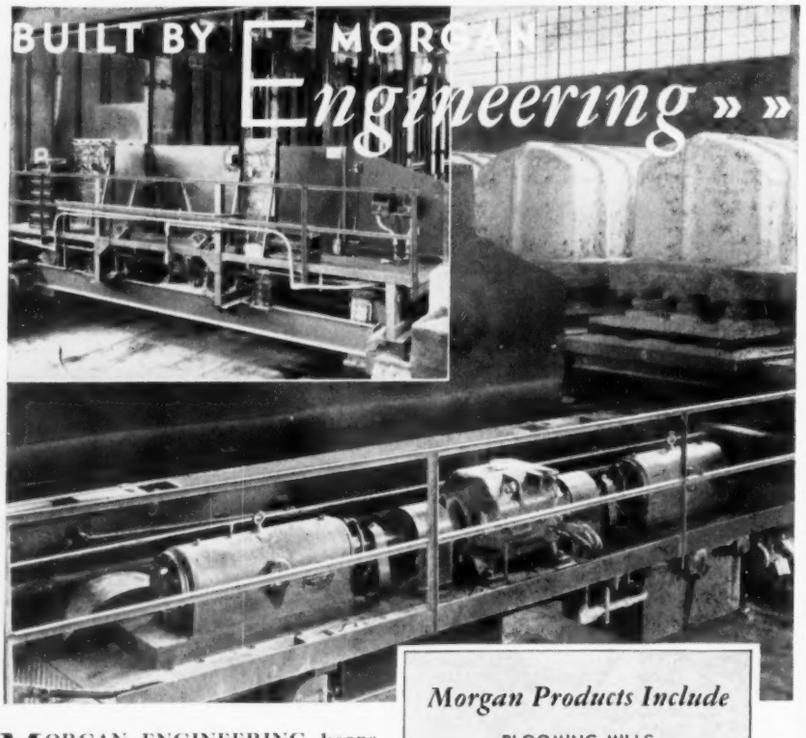
148 tons, 4 and 6-inch, class 150, Santa Monica, Calif.; bids opened.

134 tons, 8-inch, class 150, Louisville, Colo.; bids opened.

Steel Pipe Pending

14,256 tons, or 108 miles, 12-inch, oil line from San Joaquin valley, Calif., to marine terminal, San Luis Obispo county, California, for Standard Oil Co. of California, San Francisco; project will cost about $4,000,000.

645 tons, 4 to 8⅝-inch, black, Mono Basin project, Los Angeles; bids opened.



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Pig Iron

Pig Iron Prices, Page 54

Pittsburgh—New buying by district foundries is extremely scant which, plus the disinterest integrated steelmakers are showing in the basic iron market, makes for as dull a condition as at any time of the year. Only 16 steelworks blast furnaces in the district are operating and but one merchant furnace. The pig iron schedule remains set up on local base prices of $18.50 for foundry grades, $18 on basic and $19 for bessemer. Owing to declines in scrap, however, those few melters which are active once again have diverted their raw material purchases.

Cleveland—Shipments of pig iron continue to be made in scattered lots, the total being far below June but on the whole better than July. Gray iron foundries are beginning to pick up a bit, but malleable and steel foundries continue to surpass the former in activity.

Chicago—Orders are principally of a spot nature and usually involve small tonnages, but the total is fair considering the extent to which consumers increased their inventories during second quarter. Foundry operations are holding better than had been anticipated. Pig iron shipments have tended upward slowly since early July and with stocks declining, further gains are in prospect for the balance of the year. New business is quoted $18.50, furnace, for No. 2 foundry and malleable.

Boston—Pig iron demand is light, sales during the week being but a few hundred tons in small lots. Foundry melt, with one or two exceptions, is at a low rate. Steelworks also are less active, although these plants for a long period have been using a greater percentage of scrap.

Buffalo—Demand for pig iron continues slow. Sellers looked for early August to record substantial improvement in sales and shipments after an exceptionally dull July but so far have been keenly disappointed with the business trend. Some consumers claim to be stocked up for 60 days or longer. There is talk of continuation of present prices for the final quarter and this is tending to discourage forward buying.

St. Louis—The pig iron trade continues to mark time. Buying at present is confined to a few spot cars for special purposes, and the quiet which prevails now is expected to continue until the latter part of this month. The melt is holding up fair-

ly well, although there is some apprehension as to the effect of the drouth on business, especially in the farming regions.

Philadelphia—Pig iron demand remains sluggish, with little immediate improvement expected. The Birdsboro, Pa., stack has blown out, leaving only one merchant furnace operating in eastern Pennsylvania. Prices are unchanged.

Cincinnati—New buying of pig iron is limited to a few carloads. Even melters who have no considerable stock on hand, from second quarter shipments, are out of the market for future needs. Some of the hesitancy is attributed to anxiety concerning consumer volumes, deemed certain to be affected by the drouth in wide areas, although this immediate district has escaped the most serious stages. Prices continue steady.

Birmingham, Ala.—Blast furnace operations have not been changed as much as was anticipated and pig iron production is fairly steady. Market is slow, purchases being in small tonnages. Surplus stock is heavier now than for more than six months.

Toronto, Ont.—Business in the Canadian pig iron market is seasonally quiet, with indications that there may be some improvement in demand later in the month. Melters are marking time and are taking supplies only when needed for immediate use. The daily melt is holding unchanged and production is reported at between 35,000 and 40,000 tons per month, mostly in basic iron for further use of producing companies.

Scrap

Scrap Prices, Page 55

Pittsburgh—Because leading railroad scrap sellers were able last week to realize but little more than $11.25 per ton for No. 1 heavy melting steel, the price range for consumers in this district fell 75 cents a ton to the quoted range of $11 to $11.50. By sympathy, the remainder of the market also reflects a weaker tone of some 50 to 75 cents a ton under former levels which had admittedly been nominal for some time. A small sale of hydraulic compressed sheets at $11.25 tested that market last week and cast iron car wheels were sold by a railroad in this district for $10 a ton. The only strength apparent in scrap at this time is in machine shop turnings, which appears scarce even at $8 to $8.50.

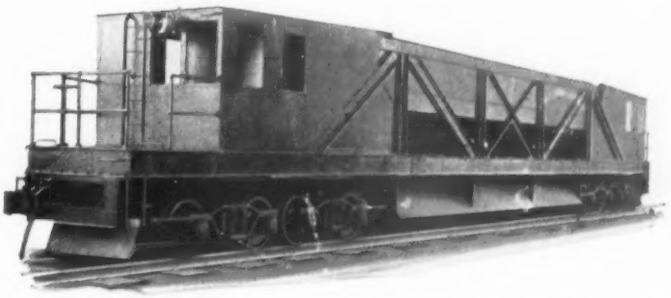
Cleveland—Some deliveries are being made of steelmaking grades of scrap on contracts, but the only other movement is specialties to foundries and some blast furnace material. Holders of scrap are unwilling to sell at present prices and dealers are slow to contract for future delivery. Prices are dull and unchanged.

Chicago—Scrap prices are unchanged, with most mills still inactive. Some steel foundries have bought recently but steelworks are influenced by continued light consumption. Uncertainty attends the outlook for prices, the absence of a surplus of quality grades of scrap currently being a strengthening factor. Heavy melting steel continues $9 to $9.50, with quoted prices on some classifications nominal.

New York—Heavy breakable cast scrap is 25 cents a ton lower, but other grades are unchanged with little test for either export or domestic demand, the latter being light.

Boston—Having covered on recent sales of scrap for export, dealers are not pressing for business, which is

ATLAS ORE TRANSFERS



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small. For export, most material has brought $8 for No. 1 delivered, dock, and $7 for No. 2. Domestic buying is light. Railroad malleable to consumers is off 50 cents per ton.

Philadelphia—Dullness rather than weakness is the dominating characteristic of steel and iron scrap here. Trading is decidedly dull, but prices are unchanged, with dealers showing little disposition to try to stimulate trading by offering concessions.

Buffalo—A district steelworks is reported to have bought a small tonnage of No. 2 heavy melting steel at $8.75 for delivery in the near future. This is not far out of line with recent nominal quotations but other dealers than the one booking the tonnage are reported to have refused to sell additional tonnage at this level. The purchase is small compared with this consumer's monthly melt and additional buying is expected.

Youngstown, O.—Iron and steel scrap prices are down sharply from the recent nominal levels, a reflection of light business which has developed in the past few days. Heavy melting steel is quoted at $10.50 to $11, with sales at both levels. The market is quiet, with buying only for actual current needs.

Detroit—Open-hearth grades of iron and steel scrap have declined 25 cents a ton, No. 1 heavy melting steel and hydraulic compressed sheets now being quoted $7.75 to $8.25. No. 2 heavy melting steel is quoted at $6.75 to $7.25, forge flashings $6.25 to $6.75, and new No. 1 busheling $6.75 to $7.25. A leading scrap consumer recently negotiated purchase of upwards of 30,000 tons of various grades of scrap.

Cincinnati—Prices on iron and steel scrap are unchanged, with sales of small, miscellaneous lots providing no test. Mills remain out of the market, and foundry demand of recent months is dwindling. Material is held closely, causing wariness toward short sales.

St. Louis—Outside of the endeavors of dealers to cover on recent sales of scrap there is no activity. There is said to be little distressed scrap, only a car occasionally, and very little is coming in from country dealers.

Birmingham, Ala.—Little old material is moving, those still in the market buying in as small lots as possible. Heavy melting steel is exceedingly slow, consumers apparently having a good supply ahead.

Toronto, Ont.—Shipments of iron and steel scrap are again going forward, but mostly in small lots. Hamilton consumers are said to be taking delivery of steel scrap, while other consumers throughout Ontario are mostly interested in iron grade.

Wire

Wire Prices, Page 53

Pittsburgh—Nail prices remain at $2.60 per keg in carloads at Pittsburgh for common and cement-coated grades, but few orders test this price. Jobbers and dealers throughout the midwest are infrequently in the market and their depressed interest is traceable to smaller rural buying. In the market for manufacturers' wire, remaining quoted 2.30c base, Pittsburgh, for No. 6-9 gage, few specifications are current. Many bolt and nut plants have only meager schedules.

Chicago—Wire demand is spotty and unimproved. Consumers' stocks help to defer new buying despite a fairly well maintained rate of consumption of manufacturers' wire in the automotive and other industries. Merchant products are moving slowly in some farm districts, although agricultural income is holding better than expected. Prices of $2.65 for wire nails and 2.35c for plain wire continue.

Boston—Despite relative steadiness in wire prices, buying is light, it being increasingly evident that consumers stocked more heavily than expected previous to this quarter. This applies especially to manufacturers' wire, with consumers schedules generally curtailed.

Warehouse

Warehouse Prices, Page 56

Pittsburgh—Although steel shipments out of Pittsburgh warehouses hold fairly well compared with the July rate, jobbers are not building up stocks. Prices have undergone no change.

Chicago—Sales show little change following the decline in July to the lowest level since February. A favorable comparison with the volume a year ago is encouraging, however. Prices are unchanged.

Detroit—Black sheets, 24 gage, are now quoted 3.93½c, Detroit warehouse, for delivery in the metropolitan territory, a reduction of $1 a

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ton. Although a slight improvement occurred in shipments in the first week of August, some declines have since been noted. July's warehouse shipments were 10 to 20 per cent less than those of June.

New York—Light improvement in buying of steel from warehouse is noted, well distributed. Prices have not been changed.

Philadelphia—Jobbing demand is being fairly sustained at the July rate, with resellers looking for little change before September. Prices are steady.

Cincinnati—Some shrinkage in demand for warehouse steel for industrial use was offset recently by buying for coal mine interests. Tonnage so far this month remains near July levels. Prices are unchanged.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 53

Buying of bolts and nuts is confined to small lots to fill in assortments and no tonnage commitments are being made. Pittsburgh makers are in receipt of small orders only. At Chicago, demand from railroad carbuilders has decreased as activity in that line has lessened.

Bolts and nuts are quoted at 70 off list. Large rivets are steady at 2.90c, Pittsburgh and Cleveland, and 3.00c, Chicago.

Cold Finished

Cold Finished Prices, Page 53

Pittsburgh—Widely scattered cold-finished steel bar orders are small and specifications are practically at a vanishing point. Jobbers of cold-finished steel, despite reports of a fair support are apparently liquidating stocks and cold-finished producing mills have entered no sizable orders from these sources. The market is unchanged at 2.10c base, Pittsburgh. Cold-drawn alloy bars are steady at 2.95c, Pittsburgh.

Metallurgical Coke

Coke Prices, Page 53

Steelworks at Pittsburgh find some demand for domestic coke, as small dealers and brokers anticipate the beginning of the season and enter some specifications. This movement is of distinct benefit to by-product plants in view of heavy coke stocks carried over from last winter.

Beehive coke producers are far from being as encouraged. No changes have occurred in the market for fur-

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nace coke, which is steady at $3.60 to $3.85, Connellsville oven basis, depending upon shipment. Foundry grades hold at $4.60 and $5.10.

Foundry shipments at Chicago are steady, close to the July rate, with all prices unchanged. Cincinnati suppliers find shipments declining in harmony with reduced steel melt. Birmingham, Ala., steelmakers are curtailing production.

Coke By-Products

Coke By-Product Prices, Page 53

New York—Domestic sulphate of ammonia has been announced at $24 f.o.b. nearest port a ton in bulk with $25.80 in 200-pound bags and $26.50 in 100-pound bags. These prices, effective through to and including June, 1935, represent a drop of $1 from the official price effective for the first half of 1934.

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Nonferrous Metals

Nonferrous Metal Prices, Page 54, 55

New York—Most nonferrous metal prices held unchanged last week in generally quiet market.

Copper—Little if any consumer interest from the so-called independents was shown. Domestic sales of electrolytic blue eagle copper averaged 200 tons daily, price holding at 9.00c, Conn. Because of fair shipments to copper fabricating plants during July, July refined copper statistics probably will be favorable.

Lead—St. Joseph Lead Co. sold at 3.75c, New York, and 3.60c, East St. Louis, to its regular customers but remained a restricted seller at these levels. American Smelting & Refining maintained its published price at 3.75c, New York.

Zinc—Moderate to fair sales were booked by some sellers in a generally quiet market. Market tone was firmer with prices for prime western spot unchanged at 4.30c, East St. Louis, and 4.65c, New York.

Tin—Straits tin prices skyrocketed Thursday, moving well above 52.00c. Sales for the week ranged 100 to 200 tons daily and moderate consumer buying was noted.

Antimony—Prices firmed up fractionally and a stronger market is expected.

Aluminum—Prices held unchanged in a quiet market.

Quicksilver

New York—Quicksilver prices are unchanged here in a quiet market. Small lots are quoted $75.50 a virgin flask of 76 pounds and round lots down to $74.50 a flask.

Pacific Coast

Pacific Coast Prices, Page 53, 54, 56

San Francisco—*(By Air Mail)*—Only two plate lettings of size were reported. Moore Drydock Co., Oakland, Calif., booked 270 tons of plates and 180 tons of shapes for a dredger hull for the Yuba Construction Co., Yuba City, Calif.

The largest structural award was secured by Ingalls Iron Works, Birmingham, Ala., 850 tons for a wharf and transit shed at Stockton, Calif.

Awards of cast iron pipe were not large, less than 1000 tons being re-

ported placed. United States Pipe & Foundry Co. booked 594 tons for Gilroy, Calif. New inquiries include 360 tons for an outfall sewer in Los Angeles and 134 tons for Louisville, Colo. Fallen, Nev., has opened bids on 428 tons. Los Angeles has taken bids on 645 tons of 4 to 8⅝-inch black steel pipe for the Mono basin project in California.

Northwest Trade Revives

Seattle—The week's shape awards approximated 2500 tons, for two of the five Oregon coast bridges. Poole & McGonigle, Portland, Oreg., have taken 775 tons of shapes and machinery for the Umpqua bridge through Teufel & Carlson, Seattle, general contractors, and Mercer & Frazier Co., Eureka, Calif., has awarded 650 tons of shapes and machinery for the Siuslaw river bridge to unstated interests. Award of 350 tons of reinforcing bars for the Umpqua project has been divided between Mercer and Soule Steel Co.'s, Portland, and 525 tons for Siuslaw bridge has been placed with an undisclosed interest. Pacific Coast Steel Corp., Seattle, will furnish 150 tons of steel sheet piling for the Umpqua bridge.

Chehalis, Wash., has called bids for 53,500 feet of 4, 6, 8 and 14-inch cast iron pipe, totaling 870 tons, to be opened Aug. 15. Omak, Wash., has ordered water system improvements including 2400 feet of 6-inch cast iron pipe. Bremerton, Wash., has not yet officially awarded the contract for 209 tons of 6, 8 and 12-inch cast iron pipe for which United States Pipe & Foundry Co., Burlington, N. J., is low.

Equipment

Chicago—Users are slow to take action on pending and proposed purchases of machinery and equipment, and the markets show little change in volume of orders and inquiries. Bids have been taken on additional equipment for the Lane Technical high school here, consisting principally of woodworking machines, and early awards are expected. Machine tool inquiries for various government shops are more numerous but few are for location in this district. Eight tools are pending for a laboratory of the department of agriculture at Madison, Wis. Developments are lacking in proposed purchases for the Rock Island, Ill., arsenal. Railroads continue light buyers of equipment for shops as also are steel plants. Bids have been opened on hydroelectric turbines for the Lockport, Ill., power plant of the sanitary district to cost about $400,000.

Steel in Europe

Foreign Steel Prices, Page 56

London—(*By Radio*)—Steel and iron markets in England are quiet, owing to the holiday period, but Scottish plants have resumed production. Orders are in satisfactory volume and export inquiry is expanding. The motorcar industry is purchasing sheets. British works generally are well supplied with orders and the outlook is promising.

The Continent also reports its markets in a dull condition but French makers have booked contracts from the Argentine, Rumania and Manchuria. Germany reports some export activity but is meeting heavy American, Japanese and British competition in South American markets.

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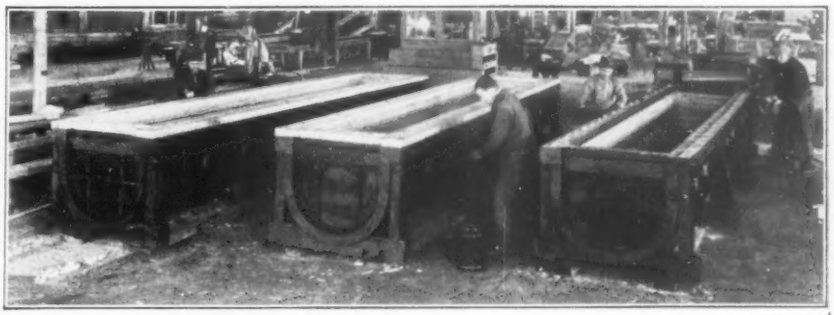

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Construction and Enterprise

New England

NORWALK, CONN.—Norwalk Machine & Staple Co. has been formed by Charles F. Kuch Jr., West Rocks road, Norwalk, Conn., and associates, to manufacture machinery for the production of paper clips and similar products.

CHELSEA, MASS.—American Oil Co., 31 St. James avenue, Boston, plans additions to its steel storage tanks to supply 306,000 barrels added capacity, at cost of about $30,000.

MILLINOCKET, ME.—Great Northern Paper Co. plans a new hydroelectric power plant for its papermill, to cost about $80,000. H. J. Deutchbein Co. Inc., 350 Fifth avenue, New York, is engineer.

New York

GLEN ROCK, N. Y.—Board of boro council will take bids soon on a waterworks plant and mains, to cost $138,000, for which PWA loan has been approved. F. M. Evans, 96 Rodney street, is engineer.

NEW YORK—Victor Craftsmen Inc. has been formed by Victor Jacobson, 239 East Forty-fourth street, to manufacture tools and mechanical devices.

RIVERHEAD, N. Y.—Town is planning to build sewage disposal plant at cost of about $40,000. F. J. Biele, 184 Nassau avenue, Huntington, N. Y., is engineer.

SYRACUSE, N. Y.—New Process Gear Corp. has been organized with $100,000 capital to take over the plant of the New Process Gear Co., recently bought at receiver's sale.

New Jersey

CLIFTON, N. J.—Bright Star Battery Co., Fifteenth street and river front, Hoboken, N. J., manufacturer of batteries, flashlights and other electrical devices, has bought the former plant of the E. J. Barbour Co., here, and will move its production there.

MILLVILLE, N. J.—City commissioners have authorized surveys and estimates of the cost of a municipal electric light and power plant for which federal aid will be asked.

Ohio

AKRON, O.—Aluminum Engineering Co. has been organized by interests represented by Waters, Andress & Wise, First Central Trust building, Akron, O., to manufacture aluminum products.

CLEVELAND—American Coach & Body Co. James Holan, president, 3809 Clark avenue, has purchased three parcels of land adjoining its present holdings for enlarging its plant.

DAYTON, O.—Monarch Electric & Mfg. Co. has been formed by John H. Doan, Miamisburg, O., to manufacture electrical equipment.

HIRAM, O.—Village has been granted $32,500 loan by PWA for diesel engine electric generating station.

PEEBLES, O.—Village has PWA loan of $55,000 for waterworks.

Michigan

DOWAGIAC, MICH.—Dowsett Spring Co., box 299, Dowagiac, Mich., has been incorporated to manufacture springs, by Fred Dowsett, Dowagiac, Mich.

KALAMAZOO, MICH.—Upjohn Co. will expend nearly $500,000 on a building and expansion program which will be under way early this month. Three structures, an office building, a factory and a steam plant, 46 x 53 feet, housing two boilers, will be erected. Automatic stokers and conveyors will be installed. (Noted April 23.)

MORENCI, MICH.—Bids will be asked soon on a municipal electric light and power plant to cost about $125,000. Ayers, Lewis, Norris & May, Ann Arbor, Mich., are engineers.

PONTIAC, MICH.—Pontiac Spring & Bumper Co. has been incorporated to deal in automobile springs, by Bessie E. Elkins, 28 Lake street.

PORT HURON, MICH. — Lakeside Brewing Co., 401 Bard street, has been incorporated with $275,000 capital, by Edward Cole, 2937 Leslie avenue.

Indiana

MARION, IND.—Peerless Machine & Tool Corp. has been formed by Martha E. Carson, John H. Carson, Robert Carson and William Berry, to manufacture machinery. John H. Carson is resident agent.

NEW ALBANY, IND.—Zier Products Co., Pearl street, has been formed by Edward M. Zier, New Albany, Ind., and associates, to manufacture machinery and equipment.

NEW PALESTINE, IND.—City council has appointed a committee with Charles Herrlich, chairman, to obtain details and estimates of cost of a municipal electric light and power plant.

Illinois

CHICAGO — Girard-Continental Condenser Corp., 2341 Wolfram avenue, has been incorporated by Dean C. Girard and associates to manufacture electrical equipment.

CHICAGO—International Harvester Co., 606 South Michigan avenue, plans alterations and construction of a 2-story foundry addition at its plant at 260 South Hoyne avenue, to cost about $30,000.

CHICAGO — Poper Iron & Wire Works Inc., 2089 Ogden avenue, has been incorporated to manufacture and deal in tools, parts, machine mechanisms and apparatus, by William Poper, Libby Schwartz and Foster Poper. Correspondent: Lewis W. Schlifkin, 188 West Randolph street.

CLINTON, ILL.—Bids will be received until Aug. 22 by board of trustees of the Clinton sanitary district, C. M. Warner president, for sewer work, including a pumping station, sewage disposal plant and other accessories. Greely & Hansen, 6 North Michigan avenue, Chicago, are engineers.

Alabama

HEADLAND, ALA.—Headland Ice & Cold Storage Co. will rebuild burned portion of its plant at cost of about $35,000, including equipment.

SELMA, ALA.—M. E. Van Arman, architect, has plans calling for bids for remodeling and repairing old Burns Bros. refrigeration plant at Water avenue into a cannery; bids for materials will be called for repair to refrigeration plant and for equipment for meat canning.

SPRINGVILLE, ALA.—Town, R. P. Presley, mayor, will receive bids Aug. 15 for constructing waterworks and sewage disposal plants, consisting of pump house and installation of centrifugal booster pump, etc. John M. Gilfillian & Associates, consulting engineers, 619 North Tenth street, Birmingham, Ala.

District of Columbia

WASHINGTON—Department of supplies and purchases, C. J. Peoples, navy department, will take bids until Aug. 14 [illegible] motor-driven pumps for the navy yard at Philadelphia.

WASHINGTON—Acacia Mutual Life Insurance Co., 101 Indiana avenue, J. P. Yort, vice president in charge, plans to install a steam power station in its new five-story building, which is to cost $1,000,000.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Aug. 17, schedule 3055, electric arc welding sets, delivery Brooklyn, N. Y., and Sewall's Point, Va.; schedule 3073, diesel generator sets and spares; Aug. 21, schedule 3056, diesel engine driven generator sets and spares, delivery Brooklyn, N. Y.; schedule 3064, motor-driven centrifugal pumps, delivery Puget Sound, Wash.; Aug. 24, schedule 3065, steel tanks, delivery Puget Sound, Wash.

Georgia

AUGUSTA, GA.—Veterans administration, L. H. Tripp, director of construction, 746 Arlington building, Washington, will open bids Aug. 28 for new boilers and plant equipment for veterans facility, Augusta.

Maryland

BALTIMORE—Chevrolet Motor Co., subsidiary of General Motors Corp., Detroit, M. E. Coyle, president, has bought 45 acres on Broening highway and will build an assembly plant with capacity for 80,000 cars per year. A Fisher body plant is planned in connection, to supply bodies. Construction of the plant will be started immediately and operations are planned to start about Jan. 1, 1935. The city will pave a road 29 feet wide and 1600 feet long to the plant on land conveyed to the city by the company. Employment for 1500 men will be provided at peak operation.

BALTIMORE—Davidson Transfer & Storage Co., 34 South Eutaw street, has acquired warehouse and wharf property on northwest corner of Key Highway and Henry street, including 3-story warehouse, office, etc., and plans to erect machine shop for repair of own equipment; will expend $25,000.

CUMBERLAND, MD.—City council plans construction of a municipal electric light and power plant to cost $1,500,000. Burns & McDonnell Engineering Co., 107 West Linwood boulevard Kansas City, Mo., is engineer.

Tennessee

KNOXVILLE, TENN. — Tennessee Valley authority, New Sprankle building, Knoxville, plans a steel tower transmission line from the Wilson to the Norris power dam with power switching stations and other line structures, to cost about $2,000,000.

West Virginia

CHESTER, W. VA.—City council is considering construction of a municipal electric light and power plant to cost about $100,000. Joel R. Taylor is mayor.

CLARKSBURG, W. VA.—City has been granted loan of $1,400,000 for sewage treatment plant.

MATOAKA, W. VA.—PWA has granted loan of $55,000 for waterworks.

Missouri

KANSAS CITY, MO.—United Metal

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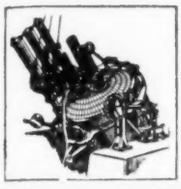

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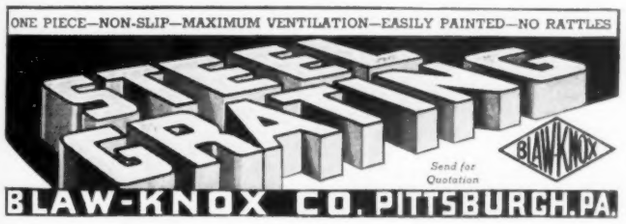

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(PITTSBURGH DISTRICT)

Spinning Co. has been incorporated by Otto C. Klemm and Henry E. Johnston.

KANSAS CITY, MO.—Apex Mfg. Co. has been incorporated to manufacture metal specialties, by Harvey E. Meyer and Joseph Cohen, Huron building, Kansas City, Mo.

MILLER, MO.—City plans construction of a waterworks plant to cost $35,000 for which PWA financing is sought. Ozark Engineering Co., court house, Springfield, Mo., is engineer.

PATTONSBURG, MO.—City has decided to construct electric light and power plant without government aid. E. T. Archer & Co., New England building, Kansas City, Mo., are consulting engineers.

PERRY, MO.—City has loan and grant of $50,000 for waterworks plant. W. B. Rollins & Co., 339 Railway Exchange building, Kansas City, Mo., are engineers.

Arkansas

OSCEOLA, ARK.—City council plans to install new equipment in the municipal electric light and power plant, including diesel engine-generator unit and accessories, to cost about $52,000, for which federal aid has been obtained.

Oklahoma

CUSHING, OKLA.—Bids will be asked in September for a new municipal electric light and power plant, including diesel engine-generator units, to cost about $350,000, for which federal aid is approved. W. R. Holway, 302 East Eighteenth street, is engineer.

SHAWNEE, OKLA.—Pyrocone Burner Co. has been incorporated with $25,000 capital to manufacture oil and gas burners, by E. A. Waldrop, president.

Texas

FORT WORTH, TEX.—Southern Motors Mfg. Co., 112 Hemphill avenue, has established a plant for the conversion of passenger cars into trucks. G. M. Hubbard is president and T. C. Kyle, manager and shop superintendent.

OVERTON, TEX.—Rotary Bit Co. has been incorporated to manufacture oil field driling tools, by Roy M. Davis, president.

HOUSTON, TEX.—Oil Center Tool Co., manufacturer of oil field equipment, A. J. Benick, president, has increased its capital to $100,000.

Wisconsin

FENNIMORE, WIS.—Bids will be asked shortly by Bertha Pope, city clerk, for construction and equipment of sewerage system and disposal plant, costing $103,000, financed by federal loan and grant. Plans are by Jerry Donohue, consulting engineer, 608 North Eighth street, Sheboygan, Wis.

LACROSSE, WIS.—City plans purchase of electric generating equipment for Myrick park water pumping station. F. L. Kramer is city clerk.

MILWAUKEE—Brace Co. has been incorporated to manufacture oil purifiers and machinery, by R. Lyle Brace, J. K. Bond and Robert Simons.

MILWAUKEE — Badger Automatic Corp. has been incorporated to manufacture paper feeding and handling devices, by Bernard S. Elliott, H. J. Hanauer and A. C. Holzbauer.

MILWAUKEE—Quirk Crate Co., 2033 West St. Paul avenue, specializing in manufacturing of milkmen's crates, has purchased a factory building of the old Federal Rubber Co. group at Cudahy, Wis., suburb of Milwaukee with 24,000 square feet and will move its plant there shortly. William Quirk is president.

MILWAUKEE—City sewerage commission has ordered three additional stokers for replacement on three 800-horsepower boilers at the disposal plant from the Hoffman Combustion Engineering Co., Detroit, at $43,224, under an option given when it purchased one stoker in January. James L. Ferebee is chief engineer.

Minnesota

COLD SPRING, MINN.—Cold Spring Brewing Co., Ferdinand Peters, president, plans construction of an addition to its storage plant. Plans have also been prepared for a new brew house to cost about $80,000, including additional brewery equipment.

FARIBAULT, MINN.—Faribault Machine & Foundry Co., manufacturer of floor drains, sash weights, sewer castings, etc., has purchased the plant and equipment of the F. W. Winter & Co. machine shop and foundry, moving considerable equipment to its own plant.

MINNEAPOLIS—Champion Oil Burner Mfg. Co. has been incorporated with capital stock of $50,000 to manufacture oil burners and accessories, by A. L. Berman, Edward J. Becker and George A. Becker.

MINNEAPOLIS—Twin City Furnace Co. has been incorporated with 500 shares no par value, stated capital $15,000, to manufacture furnaces, by M. A. Welter, J. E. Waldron, E. L. Abeles and L. M. Rohlf.

ST. PETER, MINN.—Nicollet county, W. H. Holz, auditor, will build a 1-story 54 x 80-foot county highway maintenance garage and machine shop. Ernest H. Schmidt, Kruse building, Mankato, Minn., is architect.

Iowa

CEDAR FALLS, IOWA—City will purchase coal unloading equipment for municipal light and power plant, including steel hopper, skip hoist, etc. H. E. Olbrich is city clerk.

CEDAR RAPIDS, IOWA—City council, L. J. Storey, city clerk, will take bids until Aug. 24 for aditional units at sewage disposal plant, to cost $150,000, including tanks, power plant, pumping station, and pumps. Howard R. Green Co., Bever building, Cedar Rapids, Iowa, is engineer.

Montana

LIVINGSTON, MONT. — Chromium Products Corp. has been incorporated with capital stock of $50,000 by F. L. Greene, D. N. Miles, B. L. Pampel, W. B. Calhoun and R. G. Williams.

Nevada

RENO, NEV. — Buckskin National Gold Mining Co., Reno, Nev., W. J. Bell, president, Winnemucca, Nev., plans construction of a 50-ton cyanide mill and other improvements and additions, to cost over $35,000.

Utah

MILFORD, UTAH—City plans erection of steel water tank and extension of the water distribution system, to cost about $20,000. M. P. Lewis, Milford, Utah, is engineer.

PARK CITY, UTAH—Park City Development Co., A. J. Hurley president, plans blacksmith and machine shops, ore bins, hoist and boiler and compressor houses, at cost of about $50,000.

Pacific Coast

SANTA ANA, CALIF.—National Engine Co. Inc. is equipping a new plant on East First street here to manufacture small combination bicycle and boat motors and eventually aircraft engines of 1200 horsepower. The company is headed by John Ray Dillon and Fred Offenhauser.

TORRANCE, CALIF.—Austin Construction Co., industrial engineer, 777 Washington boulevard, Los Angeles, established field offices at 203rd street and Normandie avenue and started construction of the $1,000,000-plant of Hughes-Mitchell Process Inc., Denver, to treat lead and zinc ores and manufacture paint ingredients. Six months will be required for construction and installation of machinery. (Noted July 30.)

SEATTLE—Empire Battery Co. has been incorporated with $25,000 capital by J. Fred Bishoff, 1515 Broadway.

SEATTLE — Chloro Chemical Inc., 1605 Fourteenth avenue, has been formed by George P. Goggin and associates.

SEATTLE—Tagish Lake Mining Co. has been incorporated with $60,000 capital by A. P. Harris and associates, 916 Insurance building, Seattle.

SEATTLE—Heisers Inc. has acquired a factory building, 103 x 600 feet at 5245 East Marginal Way to which the firm's bus and truck body plant will shortly be moved from 1406 Tenth avenue. H. Ridalls is manager.

SEATTLE—City light and power department, J. D. Ross, superintendent, will ask bids soon for a hydroelectric generating station, 65 x 225 feet, and a high-tension switching station, at Diablo dam project. A fund of $5,000,000 is available for immediate work on this $13,000,000 project.

SPOKANE—Jay Dee Mining Co., 314 James building, has been formed by W. R. Stuart and associates, with $15,000 capital.

TACOMA, WASH. — Indian Creek Mining Co., 823 Rust building, has been incorporated with $250,000 capital by Robrt L. McKeever and associates.

Dominion of Canada

AYLMER, ONT.—An elevated steel tank of 125,000 gallons capacity is planned by the town council. D. H. Fleming, 125 Ranleigh avenue, Toronto, Ont., is engineer.

PORT COLBORNE, ONT.—Purchase of two pumps for the waterworks plant is being considered by the town council. H. F. Johnston is town clerk.

WELLAND, ONT. — Commonwealth Electric Products Corp. has taken over a large plant and will manufacture motors and other electrical apparatus.